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FACULTY OF ENGINEERING & APPLIED SCIENCES

FACULTY OF SOCIAL SCIENCES

The Impact of Integrative and Instrumental Motivation on English Language Learning of Undergraduate Students at BUBT

Fahmida Akhter

Abstract

Motivation is a powerful predictor affecting English language learning (Ellis, 1988). If teachers know about students' attitudes and motivational levels, they will be able to choose effective materials and teaching strategies. This study aims at investigating the attitudes of first year undergraduate students in the Department of English at BUBT towards different aspects of integrative and instrumental motivation and the extent of their integrative and instrumental motivation for English language learning. It also determines whether instrumental or integrative is a more effective motivation that advances them to succeed in learning English. The data were gathered from fifty undergraduate students of first year in the Department of English at BUBT using a Likert-type questionnaire. The results of the study provide a deep insight of their motivational levels and attitudes of different aspects regarding integrative and instrumental motivation in learning English. The study also discusses the limitation of findings and implication for the further study.

Keywords: motivation, integrative motivation, instrumental motivation, teacher, student

1. Introduction

In the world of education, motivation is an equipment that can play a vital role in the advancement of second or foreign language learning. It is defined by Keller (1983) as "the choices people make as to what experiences or goals they will approach or avoid and the degree of effort they will exert in this respect" (p. 389). Motivation as Gardner (1985) states is the extent one that strives to acquire the language because of the desire to do so and the satisfaction derived from it. Before 1960s, motivation was considered as the neglected heart in EFL classroom (Keller, 1983). At present motivation is regarded as an increasingly important area in applied linguistics. In the recent period of education, 'learner' and 'learning' have got much attention to 'teacher' and 'teaching'. In this regard, teachers aim at enhancing learner autonomy and

this leads them to face much deviation in learners' motivational level. In Bangladesh undergraduate students in both public and private universities are from different backgrounds. Consequently, their motivational levels vary a lot from one another. Moreover, it is found that students especially of rural areas can hardly cope up with the idea of learner autonomy and they become demotivated in English language classes. Sarwar and Siddique (2007) investigate that although English is taught as a compulsory subject from the primary level, students consistently demonstrate a low level of proficiency in English when they reach the university level (as cited in Tonni, 2018). When they enter into the classroom with these low levels of proficiency in English, their "affective filter" (Krashen, 1982, p. 30) becomes higher and they lack in self confidence. These anxieties and lack of self confidence may demotivate them to learn English. As motivation is the key factor for learning a second or foreign language, teachers have a lot of accountabilities to initiate learners' motivation and keep it thriving throughout the learning process (Tonni, 2018). To activate students' motivation it is essential for the teachers to determine the attitudes, extent and types of their motivation. In Bangladesh perspective it is impossible for the teachers to apply all motivational strategies as the class sizes are often large in public as well as private universities. In these circumstances, knowing students' motivational levels and attitudes give assistance to teachers for using effective strategies as well as materials in the English language classroom.

1.1 Objectives of the Study

This study has been carried out to determine the attitudes of first year undergraduate students in the Department of English at BUBT towards different aspects of integrative and instrumental motivation and the extent of their integrative and instrumental motivation to learn English language. It also investigates if they are more integratively or instrumentally motivated to achieve success in learning English.

1.2 Research Questions

In this study the researcher has explored the following questions:

- What are the attitudes of first year undergraduate students in the Department of English at BUBT towards different aspects of integrative and instrumental motivation for English language learning?
- Whether and to what extent are they integratively and instrumentally motivated towards English language learning?
- Which is a more effective motivation, integrative or instrumental, that fosters them to get success in learning English?

2. Literature Review

Motivation is one of the most significant factors of linguistic achievement. It is a matter of complexity to define motivation in one single sentence. In language learning many ELT practitioners have defined motivation in different ways. To Gardner (1985), "motivation is a combination of effort plus desire to achieve a goal plus favorable attitudes towards the goal to be accomplished" (as cited in Tonni, 2018, p. 57). Harmer (1991) explains the meaning of motivation as the internal drive that pushes somebody to do something. It can be said that if we think that our goal is worth doing and attractive for us, we try to reach that goal; this is called the action driven by motivation (Wimolmas, 2013, p. 905). Motivation is explained by Lightbown and Spada (1999, p. 56) in terms of two factors: learners' communicative needs and their attitudes towards the second language community. Gardner (1982) in his socio educational model notes that motivation is perceived to be composed of three elements: effort, desire and affect (as cited in Wimolmas, 2013, p. 906). Effort refers to the time spent studying the language and the drive of the learner, desire indicates how much the learner wants to become proficient in the language and the affect means a learner's emotional reactions related to the language study (Wimolmas, 2013, p. 906). Dornyei (2001) states, "the motivational individual is persistent and attentive to the task at hand, has goals, desires and aspirations, enjoys activity, experiences reinforcement from success and disappointment from failure, makes attribution concerning success or failure, is aroused and makes use of strategies to aid in achieving goals" (as cited in Tonni, p. 57). So, motivation is a factor which leads individuals to achieve their success concerning any specific issue. In general, motivation is an ongoing process and it is one of the most prominent individual learner differences.

2.1 Types of Motivation

Harmer (1991) has used the word 'goal' to classify the motivation of second language learning (p.3). He identifies two types of goals: short-term goal and long-term goal. Short-term goal refers to a desire of learners to get success in doing something in the near future, for example, learners want to achieve good grades in their examinations and long-term goal means a learner's wish to get a good job or to make him or her capable for communicating with people using the target language (Wimolmas, 2013, p. 906). Besides, Brown (1981) identifies three types of motivation: (i) global motivation contains a general impulse to the goal of learning an L2, (ii) situational motivation differentiates according to the situations in

which learning takes place and (iii) task motivation depends on the inspiration of performing particular learning tasks.

The other forms of motivation are intrinsic and extrinsic. To Dornyei (1998), "Intrinsic motivation refers to the motivation that engages learners in an activity which is enjoyable and satisfying to do" (p. 47). Besides, it is indispensable for the integration process through which elements of one's accessible internal awareness and knowledge are assimilated and mixed with new knowledge (Walker, Greene & Mansell, 2006). On the contrary, extrinsic motivation is the aptitude to take part in an activity because of the reasons which do not link to the activity (Mahadi & Jafari, 2012). These reasons can be the expectancy of reward or evasion of punishment. Extrinsic motivation is the motivation that achieves "some instrumental end, such as earning a reward or avoiding a punishment" (Dornyei, 1998, p. 47).

Moreover, Gardner and Lambert (1972) has found two types of motivation: integrative and instrumental. Integrative motivation means learners' interest about the people and culture of a foreign language. According to Masgorat & Gardner (2003), a learner who is integratively motivated has openness to integrate with other language situation. Besides, integrative motivation as Brown (1987) points out is typical for a learner who wishes to integrate him or her within the culture of second language group with the intention of entering the community. In contrast, instrumental motivation means learners' interest to get good marks, to make good results etc. Instrumentally motivated learners involve in learning the second language in order to develop their careers, to achieve prestige and power, or to pass a course (Savile-troike, 2006, p. 86). Brown (1987) states that instrumental motivation is the motivation in which learners will be motivated if they see language as being beneficial to further their careers, give them the ability to read technical materials, or to translate. It can be pointed out that if students do not have instrumental or integrative motivation, they will face difficulties to learn and gain knowledge of a second language in the classroom (Cook, 2000).

2.2 The Importance of Motivation in Second or Foreign Language Learning

"Motivation is one of the main determinants of the second and or a foreign language learning achievement" (Dornyei, 1994, p. 273). It leads learners to express or bear out their potentials. A Motivated student is likely to learn more quickly than a student who is less motivated because the

former possesses stronger desire to reach the goal by outer or inner force than the later one (Spolsky, 1990, p.157). Highly motivated learners are active and attentive in completing a task or activity. On the other hand, learners who are less motivated are likely to lose their attention, misbehave and cause discipline problems (Wimolmas, 2013, p. 907). As teachers play a vital role to cultivate students' motivation, they need to explore those factors that are involved in encouraging learners to participate in classroom activites actively (Hedge, 2000). So, it can be stated that without motivation learning a second or foreign language is unthinkable.

2.3 The Significance of Students' Attitudes in Second or Foreign Language Learning

According to Lordasa (2007), attitude refers to the opinion or feeling that a person usually possesses towards something. Gardner (1960) shows that the positive attitudes towards a second language learning and target culture are related to success in the second language learning (as cited in Lordasa, 2007). Favourable attitudes towards Integrativeness and instrumentality as Gardner (2005) implies are supportive in English language learning (as cited in Gonzales & Lopez, 2016). Lightbown and Spada (1999) mention that the more learners succeed, the more they are inspired to learn. Therefore, teachers should develop learners' positive feeling concerning the target culture and goal by creating learning situations where students can experience success. They can use materials related to the target culture in the classroom that can create opportunities to evolve students' positive attitude towards it.

3. Methodology

This is an exploratory study in which the researcher has used a questionnaire as a quantitative data collection tool because it is easy to collect a wide range of data within a short time.

3.1 Measures

A Likert type questionnaire was constructed for the purposes of the study. In the questionnaire some of the items were adopted from Gardner's Attitude/Motivation Test Battery (English version, 2004) and also from Gonzales' Foreign language Learning Motivation Questionnaire (Gonzales, 2006). The items were designed to bring out responses

following five-point Likert scale ranging from strongly agree to strongly disagree. The questionnaires were distributed to the participants by the researcher herself. Moreover, the researcher gave clear instruction and explanation for filling out the questionnaires and returning them to her after completion.

3.2 Procedure

The data obtained from the questionnaire were analyzed using the SPSS program. Descriptive statistics (percentages, means, and grand means) was used to calculate for each item. In this study, a five point Likert type scale was used to specify participants' levels and attitudes towards several aspects of integrative and instrumental motivation. The researcher used the scale in the questionnaire to measure the levels of the agreement and disagreement based on the following criteria:

Mean range	Interpretation
3.68- 5.00	High degree of motivation/attitudes
2.34-3.67	Moderate degree of motivation/attitudes
1.00-2.33	Low degree of motivation/attitudes

3.3 Sampling

Convenience sampling technique was used to select the respondents in the study. A number of fifty undergraduate students of first year in the Department of English at BUBT were used as samples.

4. Results and Discussion of the Findings

Results and discussion of the findings based on the quantitative data are given below:

4.1 Attitudes towards Different Aspects of Integrative Motivation for English Language Learning

The items 1 to 7 have been applied by the researcher to bring out participants' attitudes towards different aspects of integrative motivation for English language learning.

Table 1:

Item no.	Statement	5	4	3	2	1	M	meaning
1	I love to take part in cultural activities of foreign countries.	12%	40%	32%	16%	0%	3.48	Moderate
2	I want to learn courtesy of native English speakers because it helps me to interact with them properly.	44%	24%	8%	24%	0%	3.88	High
3	I want to make friendship with native English speakers.	30%	30%	4%	34%	2%	3.52	Moderate
4	I prefer to read other English texts beside selected English textbooks.	40%	26%	0%	10%	24%	3.48	Moderate
5	I like to watch English movies, dramas, TV shows, etc because they help me to know about the culture of the English.	36%	24%	4%	6%	30%	3.30	Moderate
6	I like to listen to news on the English channels.	30%	20%	16%	14%	20%	3.26	Moderate
7	I love to listen to English songs.	50%	44%	2%	4%	0%	4.40	High
Grand mean							3.61	Moderate

5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagree, m=mean

Table 1 shows an overall moderate degree of positive attitudes regarding different aspects of integrative motivation to learn English with a moderate average mean of 3.61. The statement number 7 (I love to listen to English songs.) and 2 (I want to learn courtesy of native English speakers because it helps me to interact with them properly.) receive the high mean scores of 4.40 and 3.88 respectively which show the extent of participants' positive attitudes towards English songs and the courtesy of native English speakers. Besides, the statement number 1 (I love to take part in cultural activities of foreign countries.), 3 (I want to make friendship with native English speakers.), 4 (I prefer to read other English texts beside selected English textbooks.) and 5 (I like to watch English movies, dramas, TV shows, etc because they help me to know about the culture of the English.) demonstrates a moderate degree of positive

attitudes regarding some aspects of integrative motivation like taking part in foreign cultural activities, making friendship with native English speakers, reading additional English texts and watching English movies, dramas, TV shows, etc. with the mean scores of 3.48, 3.52, 3.48 and 3.30 respectively. However, the statement number 6 (I like to listen to news on the English channels.) has the lowest mean score of 3.26 and is considered as a moderate level of positive attitude towards listening to news on the English channels.

4.2 Attitudes towards Different Aspects of Instrumental Motivation for English Language Learning

The items 13 to 19 have been applied by the researcher to bring out participants' attitudes towards different aspects of instrumental motivation for English language learning.

Table 2:

Item no.	Statement	5	4	3	2	1	Mean	Meaning
13	Studying English is important to gain social respect.	30%	40%	14%	10%	6%	3.78	High
14	Studying English is useful for higher education.	70%	30%	0%	0%	0%	4.70	High
15	People admire a person whose proficiency level of English is high.	44%	36%	8%	10%	2%	4.10	High
16	Studying English is fruitful for travelling abroad.	52%	42%	2%	4%	0%	4.42	High
17	Studying English is useful to be a knowledgeable person.	44%	32%	8%	16%	0%	4.04	High
18	Studying English is helpful to get a good job.	56%	42%	2%	0%	0%	4.54	High
19	Studying English is effective to make better results.	42%	44%	8%	6%	0%	4.22	High
Grand mean							4.26	High

5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagree, m=mean

Table 2 depicts an overall high degree of positive attitudes concerning different aspects of instrumental motivation to learn English. This is revealed clearly by the average mean score of 4.26. The statement number 14 (Studying English is useful for higher education.) receives the highest mean score which is 4.70 and is considered as a high level of participants' positive attitude towards the importance of English for higher education. In addition, the statement number 15 (People admire a person whose proficiency level of English is high.), 16 (Studying English is fruitful for travelling abroad.), 17 (Studying English is useful to be a knowledgeable person.), 18 (Studying English is helpful to get a good job.) and 19 (Studying English is effective to make better results.) show high levels of positive attitudes towards the aspects of instrumental motivation for learning English mentioned in the above statements with the mean scores of 4.10, 4.42, 4.04, 4.54 and 4.22 respectively. On the contrary, the statement number 13 (Studying English is important to gain social respect.) receives the lowest mean score of 3.78. However, it is measured as a high degree of positive attitude concerning the significance of studying English for achieving social respect.

4.3 Measurement of Participants' Integrative Motivation towards English Language Learning

The items 8 to 12 have been applied by the researcher to measure whether and to what extent the participants of the study are integratively motivated towards English language learning.

Table 3:

Item no.	Statement	5	4	3	2	1	Mean	Meaning
8	Studying English makes me able to comprehend English movies, songs, etc.	46%	36%	2%	6%	10%	4.02	High
9	Studying English assists me to understand the ways of the life of native English speakers.	24%	30%	18%	8%	20%	3.30	Moderate
10	Studying English helps me to take part in foreign cultural activities.	24%	26%	26%	24%	0%	3.50	Moderate

Item no.	Statement	5	4	3	2	1	Mean	Meaning
11	Studying English makes me able to communicate with the people of other national backgrounds.	26%	38%	12%	4%	20%	3.54	Moderate
12	Studying English supports me to learn the etiquette of native English speakers.	16%	62%	8%	4%	10%	3.65	Moderate
Grand mean							3.60	Moderate

5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagree, m=mean

Table 3 depicts that the participants possess a moderate degree of integrative motivation to learn English with the average mean score of 3.60. The statement number 8 (Studying English makes me able to comprehend English movies, songs, etc.) has the highest mean score which is 4.02 and is considered as a high level of integrative motivation for learning English. In addition, the statement number 10 (Studying English helps me to take part in foreign cultural activities.), 11 (Studying English makes me able to communicate with the people of other national backgrounds.) and 12 (Studying English supports me to learn the etiquette native English speakers.) show participants' moderate levels of integrative motivation concerning English language learning with the mean scores of 3.50, 3.54 and 3.65 respectively. However, the statement number 9 (Studying English assists me to understand the ways of the life of native English speakers.) has the lowest mean score of 3.30 which is regarded as a moderate degree of integrative motivation towards English language learning.

4.4 Measurement of Participants' Instrumental Motivation towards English Language Learning

The items 20 to 24 have been applied by the researcher to measure if and to what extent the participants of the study are instrumentally motivated towards English language learning.

Table 4:

Item no.	Statement	5	4	3	2	1	Mean	Meaning
20	I learn English to get a good job.	26%	48%	12%	12%	2%	4.08	High
21	I learn English to make good results.	36%	46%	12%	4%	2%	4.10	High
22	I need to study English for higher education.	52%	34%	10%	0%	4%	4.30	High
23	Studying English will help me a lot to travel abroad.	48%	40%	6%	2%	4%	4.26	High
24	I need to be proficient in English to get respect from others.	18%	50%	4%	22%	6%	3.52	Moderate
Grand mean							4.05	High

5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagree, m=mean

Table 4 reveals that the respondents have a high degree of instrumental motivation concerning English language learning. This is shown clearly by the average mean score of 4.05. The statement number 22 (I need to study English for higher education.) has the highest mean score which is 4.30 and is regarded as a high level of instrumental motivation to learn English. Afterwards, the statement number 20 (I learn English to get a good job.), 21(I learn English to make good results.) and 23 (Studying English will help me a lot to travel abroad.) depict respondents' high levels of instrumental motivation for learning English with the mean scores of 4.08, 4.10 and 4.26 respectively. However, the statement number 24 (I need to be proficient in English to get respect from others.) shows the lowest mean score of 3.52 which is considered as a moderate degree of instrumental motivation regarding English language learning.

4.5 The Comparison between Participants' Integrative and Instrumental Motivation towards English Language Learning

Table 5:

Motivation	Mean	Meaning
Integrative motivation	3.60	Moderate
Instrumental motivation	4.05	High
Grand mean	3.83	High

Table 5 presents the comparison between participants' integrative and instrumental motivation to learn English. The average mean score of their instrumental motivation (4.05) is higher than that of integrative motivation (3.60) for learning English. It can be stated that instrumental motivation is more effective that promotes them to get success in learning English than integrative motivation. However, the average mean score of both types of motivation is 3.83 that demonstrates their high levels of motivation towards English language learning.

5. Limitations of the Study, Implication for the Further Study and Conclusion

This quantitative study has investigated the attitudes towards different aspects of integrative and instrumental motivation for learning English of the first year undergraduate students in the department of English at BUBT. Besides, it explores whether and to what extent they are integratively and instrumentally motivated for learning English. It also finds out whether integrative or instrumental motivation is more fruitful for encouraging them to get success in learning English. The findings reveal that the subjects of the study have an overall moderate degree and an overall high degree of positive attitudes in different aspects of integrative and instrumental motivation respectively to learn English language. Besides, these findings show that the participants possess a moderate degree of integrative motivation and have a high degree of instrumental motivation to learn English. Again, based on the comparison it is discovered that instrumental motivation is more efficient that advances the participants to achieve success in learning English than integrative motivation. The findings of the study help teachers a lot for using effective strategies as well as materials in the English language classroom.

 However, this study is not devoid of its limitations. If it took more samples, the results might be different. Besides, a questionnaire was used to conduct the survey that might produce "unreliable data" (Dornyei, 2001, p.206) because sometimes participants do not answer the questions with proper attention. If it used qualitative data along with quantitative data, the results would be more authentic. So further study can be conducted concerning these aspects. It can be stated that in spite of its limitations this study provides an illuminative picture regarding motivational levels and attitudes towards various aspects of integrative and instrumental motivation of the first year undergraduate students in the department of English at BUBT.

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Appendix

Questionnaire
On
Integrative and Instrumental Motivation in
English Language Learning

Name: Department:

Gender: Semester:

Please give your opinion about the statements below by ticking one answer for each.

Item No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	I love to take part in foreign cultural activates.					
2	I want to learn the courtesy of native English speakers.					
3	I want to make friendship with native English speakers.					
4	I prefer to read other English texts beside selected English textbooks.					
5	I like to watch English movies, dramas, TV shows, etc.					
6	I like to listen to news on the English channels.					
7	I love to listen to English songs.					
8	Studying English makes me able to comprehend English movies, songs, etc.					
9	Studying English assists me to understand the ways of the life of native English speakers.					
10	Studying English helps me to take part in foreign cultural activities.					

Item No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
11	Studying English makes me able to communicate with the people of other national backgrounds.					
12	Studying English supports me to learn the etiquette of native English speakers.					
13	Studying English is important to gain social respect.					
14	Studying English is useful for higher education.					
15	People admire a person whose proficiency level of English is high.					
16	Studying English is fruitful for travelling abroad.					
17	Studying English is useful to be a knowledgeable person.					
18	Studying English is helpful to get a good job.					
19	Studying English is effective to make better results.					
20	I learn English to get a good job.					
21	I learn English to make good results.					
22	I need to study English for higher education.					
23	Studying English will help me a lot to travel abroad.					
24	I need to be proficient in English to get respect from others.					

5= strongly agree, 4=Agree, 3=Undecided, 2=Disagree, 1=strongly disagree

Thank you for your participation.

Generational Differences in the Dynamics of Bengali Diaspora in Lahiri's *The Namesake*

Tarin Binte Enam

Abstract

Jhumpa Lahiri is one of the noted Bengali American writers who experienced the diasporic crisis as a second generation immigrant settled in America. Her insightful writings on Bengali diaspora result from her own experiences in a multi-cultural society as she herself is a hybrid subject with a Bengali ancestry and American upbringing. Her first-hand experience in the host land enriched her diasporic writings. Her fictions show how the Bengali people hold distinct position among the South Asian people for their rich cultures and conventions. Lahiri's *The Namesake* is one of the acclaimed diasporic novels where she portrays the difficulties of Bengali immigrants from West Bengal who tend to stick to their cultural values which form a part of their identity construction. Despite an auspicious life in America, the physical and psychological dislocation from their origin creates a yearning within the Bengali people. Moreover, generational difference is an inescapable fact in this novel where both the first and the second generation immigrants are found to suffer and response from different stances in the diasporic situation. It is also notable that eventually they learn to adjust themselves in an unaccustomed environment. The paper analyzes the diasporic crisis of the Bengali immigrants of both the two generations and the major aspects of Bengali culture and values that impact their assimilation process greatly.

Keywords: Bengali Diaspora, generational difference, Identity crisis, culture, hybridity, assimilation.

A Diaspora involves the displacement of people from their native land on several grounds that eventually determines the complex process of assimilation through which they tend to settle their roots elsewhere. From the Greek word, 'diasperio' the term has been devised to stand for 'scattering'. The ancient history of the Jewish dispersal became associated with the term more widely and came into the centre of Diaspora theory. Diaspora theory did not revolve around only the Jewish diaspora rather it

was the starting point of theorization. Later on the process of theorization includes various experiences of the diasporic people such as Armenian, African, Chinese, Caribbean, South Asian and so on. In the age of imperialism and colonialism people were forcefully displaced from their homeland. Their exilic experience in a foreign land left a collective trauma within themselves that persuades them to retain their authenticity. But in the postcolonial era a new stream of diaspora is evolved identified as "new diaspora" by the theorist Clifford.

In 1965, the US Congress passed the historic Hart-Celler Act (The Immigration and Nationality Act) that dismissed the racist 1924 Johnson-Reed Act and opened the door for the educated, skilled professionals including the Bengali Indians to have an access to establish their legal and permanent residence in the developed countries like the USA, the UK, Canada and other countries even with their family for a secured and better life. This new wave of migration and its aspects are discussed in Vijay Mishra's "New Indian Diaspora" (441-42). These immigrants including specialist doctors, teachers, engineers, economists, writers and other professionals gradually have become the subjects of diaspora writings.

Diaspora literature as a part of postcolonial study tends to explore not only the reasons behind the geographical dislocation but also the traumatic experiences of the new diasporic immigrants who undergo intricate mechanism of adjustment in the host land. Every category of diaspora has its own history and tradition and that is why the writers of diaspora literature concentrate on their own ancestral lineament.

The subjects of Bengali diaspora of West Bengal and Bangladesh have been reflected in the works of Jhumpa Lahiri, Bharti Mukharjee, Sunetra Gupta, Monica Ali and some other writers who themselves dwell between transnational identities having Bengali ancestry. Their fictions focus upon the issues of identity reconstruction in the host land, intricate process of assimilation, successful establishment of home and the reconciliation between the distinct cultures in the global context. Their fictions not only chronicle the diasporic experiences of the immigrants but also reflect the South Asian as well as Bengali traditions and practices that have a great impact on the immigrant life. Diaspora literature is getting popularity for the realistic demonstration of diasporic experiences of the first and second generations since they are torn between their ancestral conventions and the culture of western life. The writers being the hybrid subjects try to reveal the psychological issues of the immigrants where they tend to give importance to the space of locality in the context of globalism. The South

Asian people uphold distinctiveness in their conventions and culture that are of core interest of the diaspora writers. Especially the Bengali people can easily be distinguished for their dimensional traditions, culture and religious conventions. They are found to be highly respectful to their customs despite their negotiation with the western culture. Their intensity of emotion toward their culture may appear dramatic but it cannot be denied that culture is the essence of Bengali identity. Importance of the issues of marriage, motherhood, cultural and religious practices can be apprehended that they never want to give up entirely. In the host land, Bengali people seek their own community that shares the same root in order to maintain a familiar tie within themselves that keeps them closer to their root and by securing their rituals in the host land they tend to maintain a commitment to their ancestry.

It is also noteworthy that the Bengali people of different generations act and react from different perspectives in the diasporic situation. While the first generation feels an emotional loyalty to their ancestral origin and culture, the second generation considers it a mere practice. In their diasporic life, the first generation tries to get accustomed to their adopted home and being stuck between the root and the host land, the second generation seems to suffer for their perplexed identity.

Jhumpa Lahiri is one of the notable Indian American writers who has a direct diasporic background by her own immigrant life as well as her parents'. She is a British by birth but brought up in America with the origin of Calcutta as her parents were the first generation Indian immigrants. Despite her cosmopolitan view she chooses to write the complexities of life the immigrants encounter in the foreign countries as well as in the host lands. In her diaspora fiction *The Namesake* (2003), she narrates the physical and psychological torments of Bengali immigrants settled in America. Besides, the issue of generational variance is precisely reflected in her diaspora fictions where two generations are found struggling and assimilating in their own ways. Being a second generation Bengali immigrant, Jhumpa Lahiri focuses on the 'gap' between the two generations that results in diverse attitude toward life and relationships.

The story *The Namesake* spans the year 1968 through 2000 narrating the experiences of two generations of Bengali immigrants. At the very beginning of the novel, Ashima Ganguli has been insinuated as a Bengali woman living in Cambridge, Massachusetts expecting her first child. Through her reminiscence we can get an impression about her previous life in Calcutta and in the Bengali wedding tradition Bengali people

usually come across in their country. Ashima's husband, Mr. Ashoke Ganguli an engineer by profession was settled in Boston as a Ph.D researcher on fiber optics two years earlier before their marriage. According to the practice of contemporary Bengali patriarchal society, Ashima was married off to Ashoke at her nineteen and from Ashima Vaduri she became Ashima Ganguli very soon. After their wedding Ashima flies with her husband to Boston, an unfamiliar place, and even she has never heard of. "Paradoxically, diasporic journeys are essentially about settling down, about putting roots elsewhere." (Brah 443).

Trauma of physical, psychological and culture shock is evident in this novel that is mainly found in the first generation immigrants. During the period of her pregnancy, the sense of extreme alienation broods over her. Even in the hospital before her delivery when she is terrified of being a mother in a foreign country, she finds comfort in the "printed pages of Bengali type" (Lahiri 6) of *Desh* magazine. Ashima being a typical Bengali bride suffers more than her husband. During her pregnancy it seems strange to Ashima how a Bengali girl give birth to her child in a "place most people enter to suffer or die" (Lahiri 4). An unknown anxiety broods over her regarding her motherhood. Because usually Bengali women can give birth to their child in parents' home where they are attended by lots of relatives to take care of the new born baby and the mother. The idea of motherhood is highly significant there, but in America, the situation for Ashima is entirely different. So she senses the extreme loneliness and pain of being deprived of such caring: "She is terrified to raise a child in a country where she is related to no one, where she knows so little, where life seems so tentative and spare". (Lahiri 6).

Maya, Dlip Nandi and Dr. Gupta who are from Bengali community in America, act as the substitutes of Ashok and Ashima's parents and relatives. Their presence in this foreign land is a consolation for them. James Clifford in his article "Diasporas"(1994) articulates about diaspora communities that they "mediate, in a lived tension, the experiences of separation and entanglement, of living here and remembering/desiring another place" (311). At the outset of the novel we find the same feeling within Ashima who is one of the central diasporic figures in this novel. After the birth of their first child they face the complexities in naming the baby as the Bengalis have two names according to their tradition but in America there is no tradition of keeping pet names. In order to follow the Bengali naming tradition, Ashima waits for a letter containing the name of her son sent by her grandmother who is the oldest member of their family.

As the formalities must be fulfilled, Dr. Wilcox suggests them to keep the name after their ancestors as the British people seldom do. But Ashima and Ashoke know that this would never be allowed in Bengali tradition:

> This tradition doesn't exist for Bengalis, naming a son after mother or grandmother. The sign of respect in America and Europe, this symbol of heritage and lineage, would be ridiculed in India. Within Bengali families, individual names are sacred, inviolable. They are not meant to be inherited or shared. (Lahiri 28)

But as the letter never arrives, Ashok and Ashima select a good name in Bengali and a pet name after a Russian writer Nikolai Gogol for their son. Subsequently this act of naming grinds out acute diasporic crisis within teenager Gogol leading to the decision of changing the name. The distinct viewpoints of the two generations mainly start from this choice of naming that is found throughout the novel. The backdrop of the novel starts from 1968 and at that time, the communication system was not so much improved like the present time. The first generation immigrants often had to depend on mailing system. So a perpetual waiting for the news from homeland was so prodigious for themselves that it is incomprehensible for the second and third generation immigrants. Ashima's waiting for the letters sent by her family members solace her for a while. Being shocked at the social and cultural changes and after living for a couple of years in the new country, Ashima tells her husband: ". . . hurry up and finish your degree . . . I don't want to raise Gogol alone in this country. It's not right. I want to go back" (33). Her miserable life in Cambridge creates sympathy within the readers. "For being a foreigner, Ashima is beginning to realize, is a sort of lifelong pregnancy- a perpetual wait, a constant burden, a continuous feeling out of sorts" (49). But gradually Ashima adapts the ways of raising her children in a foreign country. The reader's anxiety reduces when Ashima alone goes out with her new born baby to buy white long grain rice. For the first time she confers her trust upon Cambridge when she gets back all her shopping bags that she had lost in the train. Her acculturation process takes place bit by bit. The Bengali circle acts as a substitute for their family. Ashima finds other homesick Indian wives who regularly visit her for advice. Their husbands are also professionals like Ashoke, teachers, doctors or engineers. When they all meet together, they drink milk tea, eat shrimp cutlets and sing the songs of Tagore or Nazrul, the two classic Bengali poets. They argue over Bengali cinemas directed by Ritwik Ghatak or Satyajit Ray. The issues of Indian politics and issues of Calcutta certainly come in their discussion despite their concern for

American politics. Ashoke and Ashima do not forget to invite their Bengali circle in the celebration party of the rice ceremony of Gogol that is a mandatory ritual performed by the Bengali Hindus. This is a culture of introducing Bengali foods with the child. As "There is no baptism for Bengal babies" (38) according to Hindu Bengali custom, in the rice ceremony of Gogol, Mr. Dilip Nandi performs the role of Gogol's maternal uncle yet Ashima mewls at the absence of her brother and parents: "Ashma's eyes fill with tears as Gogol's mouth eagerly invites the spoon. She can't help wishing her own brother were there to feed him, her own parents to bless him with their hands on his head." (40).

However, for all the kids the picture is the same as Gogol's. The second generation kids do not find any emotional bonding with the Bengali customs. They know Bengali language but seldom speak it. In the get-together parties of Bengali community, the first generation immigrants are found to discuss and practice their cultural and religious rituals frequently. But Gogol finds nothing interesting in the revolutionary history of Subhas Chandra Bose or Bengali Renaissance that gives solace to his parents. On the other hand, Ashoke and Ashima feel uneasy when their children speak English in purely American accent that they are not accustomed to. They take their children to enjoy Apu Trilogy or attend Bengali occasions with themselves. But the Bengali world is unfamiliar to Gogol and Sonia and on the other hand, the American language and culture create embarrassment for their parents. The polarity becomes distinctly apparent when they altogether fly to India for eight months. To Gogol and Sonia these vacations seem to be an imprisonment: "Difference between the generations arises from exposure to the integrating services of the majority society from birth. Experiences of education system and the employment sphere influence their attitudes and relationships. The child is confronted with both cultures at the same time begins to absorb totally different views of family life and society " (Hussain 26). When they reach Calcutta, many relatives welcome them with intense warmth: "swallowed by hugs and kisses and pinched cheeks and smiles". Gogol and Sonia's uneasiness with the relatives like 'mashi', 'pishi' 'maima' or 'kaku' 'jethu' becomes apparent in the description. But the difference is that Ashima and Ashok get back "a confidence Gogol and Sonia never see in Pemberton road." (Lahiri 81).

At the time of departure from Calcutta, Gogol and Sonia feel relived as if they have been released from a prison. But the picture is opposite for Ashoke and Ashima. Especially every time Ashima's heart becomes

burdened with the pathos of separation from the root, from the comfort zone. Avtar Brah in her book *Cartographies of Diaspora* (1996), sets the concept of homeland for the diasporic people as " 'home' is a mythic place of desire in the disaporic imagination. In this sense it is a place of no return, even if it is possible to visit the geographical territory that is seen as the place of 'origin' "(192). Jhumpa Lahiri portrays the antithesis of two generations in the trips taken between America and India. Ashima and Ashoke are leaving their comfort zone India at the same time their children feel happy for the journey heading to their comfort zone, America.

Despite intense attachment to Bengali practices, Ashoke and Ashima learn gradually how to negotiate between Bengali and American culture that results in a cultural ambivalence within themselves. "Diaspora highlights the global trend of creating, constructing and reconstructing identity, not by identifying with some ancestral place but through travelling itself. While the diasporic subject travels, so does culture" (Ashcroft et al. 427). In this novel Bengali cultures also travel with Ashoke and Ashima and undergo transformations, at the same time the dominant culture takes place rapidly. For their children Ashima begins to celebrate the Christmas. Ashima catches up how to prepare turkey roast but yet she mixes Bengali spices: garlic, cumin and cayenne with it. The religious rituals seem to be very different to Gogol and Sonia; they love the celebration of Christmas with delicious food than the rituals of pujos with "bland vegetarian food"(Lahiri 65). Ashoke and Ashima also allow their children to take American foods like cheese, mayonnaise, tuna fish, hot dogs that they do not take for themselves. She prepares "lamb curry with lots of potatoes, luchis, thik channa dal with swollen brown raisins, pineapple chutney, sandeshes molded out of saffron-tinted ricotta cheese" on the occasion of the birthday of Gogol who loves it. The recurrent description of Bengali and American foods makes a bridge between the two cultures. Bhabha in his book, *The Location of Culture* comments:

> The enunciation of cultural difference problematizes the binary division of past and present, tradition and modernity, at the level of cultural representation and its authoritative address. It is the problem of how, in signifying the present, something comes to be repeated, relocated and translated in the name of tradition, in the guise of a pastness that is not necessarily a faithful sign of historical memory but a strategy of representing authority in terms of the artifice of the archaic. (34-35).

Cultural distinction also lies in the presentation of food and hospitality between America and Indian Bengalis. Gogol wonders at the culture of Maxine's family when he attends them in a dinner as a guest. They serve him pieces of steak floating on dark sauce, boiled green beans, roasted potatoes, salad and wine. Gogol cannot imagine how so few dishes can be served before the guests! Because in Bengali culture guests are entertained with various food items and they are insisted by the host to take food twice or thrice. It is considered as a manner for the Bengalis. But Gogol discovers that none in Maxine's family pays any attention to his plate. He sinks into thought, "His own mother would never have served so few dishes to a guest. She would have kept her eyes trained on Maxine's plate, insisting she have seconds and then thirds." (133). Apart from this issue, other facts become apparent in Lahiri's description. The liberal environment of Ratliff family attracts him the most. He also discovers that the relation between Maxine and her parents is friendly to a great extent and no gap lies between them. They allow Maxine to lead her life as she wishes, no restrictions is put on her. But Gogol's life is different according to their Bengali customs and cultures. All friends of his parents are Bengali, their marriage was settled by their family and they never express their intimacy or emotion toward each other openly like Maxine's parents. Gogol wonders how cultural difference makes him distinct from Maxine.

The complexities with identity formation unfold intense feeling in diasporic people. For the first generation immigrants, the concept of identity revolves around their root and logically they turn back to their own community in the host land. To the theorists, diasporic people must have the consciousness regarding their identity. According to Tololyan, by the continuous practice of 'diasporic consciousness' one can be identified as a 'diasporan' (17). The first generation immigrants always search for the community where people share a similar past; they uphold a collective consciousness regarding their root, their identity. They may settle themselves in the host land, can assimilate the cultural aspects to a certain degree but can never consider any foreign land as their own. To them their own native land is their home where they can find comfort; it is a place associated to their emotion. So their community is actually based on the past memories of their motherland. The first generation immigrants, Ashok and Ashima can be considered as settlers from Calcutta, India but Gogol's identity can not find its root even though he was born as an American, because the cultural identity he acquires from his family is Bengali. For him the struggle is much more severe than his parents'. The trauma of dislocation and relocation is apparent within Ashok and Ashima

but Gogol is floating between the two. His parents believe that homeland is the place where all their family members live, a place of emotional attachment. To Clifford, Diaspora communities "mediate in a lived tension, the experience of separation and entanglement, of living here and remembering and desiring another place" (311). Unlike their parents, the second generation immigrants do not have any stability regarding this concept of homeland and identity. Gogol hates to keep in touch with any Indian community or friends. Compelled by his parents' desire, he attends lots of Bengali programs at his early age but later he avoids joining such associations.

In an interview in 2003 Jhumpa Lahiri asserts: "for immigrants . . . the loneliness, the constant sense of alienation, the knowledge of and longing for a lost world, are more explicit and distressing than for the children. On the other hand, the problem for the children of immigrants those with strong ties to their country of origin are that they feel neither one thing nor the other". To Gogol and Sonia, the long vacation in India means nothing, "the eight months are put behind them, quickly shed, quickly forgotten, like clothes worn for a special occasion, irrelevant to their lives." (Lahiri 88). Gogol's earlier and present experiences get interwoven in the process of identity formation. Gogol is an American by birth with an Indian ancestry but his name being Russian he yearns more for a solid identity. The problem with naming first arises when Ashoke and Ashima decide a new formal name for him at the early age when he is about to get admitted in a kindergarten. Suddenly Gogol becomes Nikhil whom he does not know! He does not realize the Bengali tradition about naming that his parents explain: "they each have two names, too, as do all their Bengali friends in America, and all their relatives in Calcutta. It is a part of growing up, part of being a Bengali" (57). Gogol stops responding to this new Bengali name in his school and consequently the school authority gives preference to the child's choice. His nick name becomes his main name and apparently this is the starting point of negotiation between the two generations in the diasporic context. The problem of naming comes repeatedly in this novel that is metaphorical with the name of the novel. Gogol suffers more than his sister for his Russian name that does not conform to either Bengali or American culture, rather it constructs a complex identity for him: "Gogol hates that 'his name is both absurd and obscure, that it has nothing to do with who he is, that it is neither Indian nor American but of all things Russian'" (76). Being stuck in a hyphenated position he lives nowhere. A hyphenated subject can be detected who upholds hallmarks of both homeland and host land. But Gogol's position

can be considered within a transformed manner. Firstly he stays on hyphenated between his two names but at the same time he remains a hybrid subject. Hybridity "commonly refers to the creation of new transcultural forms within the contact zone produced by colonization" (Ashcroft et al. 108). But the meaning of hybridity has been expanded with the process of globalization. Gogol's identity goes through several transformations with its hybridity. According to Hall, "diaspora experience is defined by . . . the recognition of a necessary heterogeneity and diversity, by a conception of 'identity' which lives with and through, not despite, difference; by hybridity" (235).

At his teen age, Gogol never feels comfort in chatting with his friends or strangers. He tends to use the name Nikhil again that gives him comfort. The shortcut form of the name can be taken as Nick that sounds American. He does not find any logic of naming him after the name of such a melancholic Russian writer. He does not read the story book that his father gifted him on his fourteenth birthday because "To read the story, he believes, would mean paying tribute to his namesake, accepting it somehow." (Lahiri 292). At his adulthood, he changes his name into Nikhil going through some legal process that hurts his parents as Ashoke's emotional past is associated to the name. In the court he admits "I hate the name Gogol . . . I've always hated it" (102). From Lahiri's vivid narration we clearly find the different attitudes of the two generations regarding the issues of naming and education. Unlike his parents, he considers the traditional Bengali custom of naming so absurd and decides to change it. After discovering himself in a new identity Gogol's confusions turn into confidence resulting his refusal to study in MIT just as his parents wished. He chooses to go to Yale where he can enjoy his freedom. But the complexity still remains within his name. Nikhil cannot immune himself from Gogol. When he returns to Boston he feels the old pain with the name Gogol as Gogol still exists inside Nikhil. His position has been figured from two viewpoints. Firstly, he is stuck in his duel identity for being an American by birth and an Indian by ancestry, secondly, his perplexed existence between the two names: Gogol and Nikhil. In both the cases the writer figures his crisis to a certain extent: "At times his name, an entity shapeless and weightless, managed nevertheless to distress him physically like the scratchy tag of a shirt he has been forced permanently to wear" (276). Gogol wonders when he goes to attend a panel discussion about Indian novels written in English requested by a senior *deshi* brother. He comes to know about the term 'ABCD' that he had never heard before. ABCD stands for "American-born confused deshi" and 'C' also denotes

'conflicted'. Gogol discovers that he himself also belongs to those 'ABCD' who are unable to answer the question "Where are you from?" (118). He knows that to his parents, India is their *desh* (country) but he himself never considers India as his desh rather he thinks of it as other Americans do. Ashoke and Ashima befriend a lot of countrymen (*deshi* people) in America but Gogol finds no logic to befriend such ABCD people in his college. Even the concept of motherland embarrasses him. But the fact that he realizes gradually is that he is not accepted by the Americans since he lacks purity of colour and culture. His parents suffered for upholding diasporic identity in an unfamiliar world but he suffers for being a hybrid subject in the mainstream American culture. Both the generations encounter identity crisis but the complexities of the second generation are more intense than those of the first generations. Ashoke and Ashima consider India as their homeland and embrace Bengali language, customs and conventions more passionately that actually mark their Bengali identity whereas Gogol finds his identity a problematic one. Unlike his parents, he does not know to which community he should stick to.

Despite his pure American accent and respect and fondness toward American culture he is considered an Indian. In Maxine's farm house on the occasion of Gogol's twenty seventh birthday, he encounters Pamela, a neighbor of Ratliff, who criticizes the weather of India and considers him an Indian despite the clarification of his American identity. Yet the lady does not give up saying, "But you're Indian, I'd think the climate would not affect you, given your heritage." (Lahiri 157). The people of the host land indicate the impurity or hybrid nature of transnational identities that lack purity of their culture. But a sort of change becomes apparent within Gogol after his father's death. To Stuart Hall, identity is not 'transparent' or 'unproblematic' rather he sees it as "a production, which is never complete, always in process and always constituted within, not outside" (222). Gogol is no exception here; he is seen to perform all the religious rituals willingly that the Bengali Hindus usually do after someone's death. He breaks up with his American girlfriend Maxine who sheltered him once to flee from his unpleasant Bengali root. Moreover, considering the issue of generational difference, Yasmin Hussain comments that the environmental variations between the host culture and the native culture have a great impact on "the individual's concept of self"(26). Gogol's identity formation does not remain fixed, it is constructed and reconstructed throughout the novel.

However, Ashima's assimilation is noteworthy in the novel. After her husband's death, she becomes psychologically weak but her strong appearance convinces the readers. Earlier what she could not take easily later she is seen negotiating those facts so lightly and nicely. "Diaspora identities are those which are constantly producing and reproducing themselves a new, through transformation and difference" (Hall 402). The difference between the first and the second generation women is obvious in the novel. Despite her modest negotiations with the American culture, Ashima as a typical Bengali woman who upholds and respects 'Bengaliness' that always stands for her origin and identity. She all time wears sarees and sandals. In contrast to her, Sonia and Moushumi are found to be more comfortable with their western life and viewpoints. Their modern dress up and unwillingness to follow the typical role of Bengali women indicted the different attitudes of the two generations. Sonia chooses to marry a man of hybrid heritage that is unthinkable for a typical Bengali woman. In order to follow the Bengali custom, her mother Ashima left her root and accompanied her husband in an alien land. In contrast, the second generation is gifted with the flexibility to lead their life according to their own choice. Ashima's daughter in law Moushumi prefers to free herself from the bondage of marriage and goes with Dimitri to whom she is mentally and physically attached. Her marriage with Gogol makes their parents happy but to her, Gogol is not the man she yearns for. And the remarkable difference between the two generations is that Moushumi used to make the physical intercourse frequently with Gogol before their marriage and later with Dmitri which is totally unimaginable for Ashima.

As a part of her assimilation, Ashima changes the ways of her thinking with the passage of time. She expresses her liberal viewpoint regarding Sonia's marriage with Ben who is of mixed heritage, half Jewish and half Chinese. After the breakup of Gogol and Moushumi, Ashima realizes that all time a marriage may not be successful despite the sameness of the race, the ethnicity, the cultural or religious views, the customs of marriage and some other factors also matter to make each other happy:

> But fortunately they have not considered it their duty to stay married, as the Bengalis of Ashoke and Ashima's generation do. They are not willing to accept, to adjust, to settle for something less than their ideal of happiness. That pressure has given way, in the case of the subsequent generation, to American common sense. (Lahiri 276)

To Ashima, the concept of 'home' has been changed due to the experiences of her immigrant life. A home is not only the place where someone lives, rather it is a place where one is emotionally attached to and certainly the emotions come out of the relationships of near and dear ones. So what seems impossible at the very beginning of the novel, becomes possible at the concluding part of the novel. After the death of her husband, Ashima makes her new home in the host land where her position has been relocated finally. Once she thought herself dislocated from her root both physically and psychologically, but now as a diaspora subject, she learns how to construct a new home in the host land. Her successful cultural assimilation has been presented realistically in the novel. As a typical Bengali woman, Ashima neither goes beyond the expected Bengaliness nor totally denies the transformation she and Ashoke undergo in America. While suggesting approaches of comprehending diaspora, Vertovec advocates to consider cultural production resulted from diaspora where a diaspora subject coalesces both the native and host culture (19).

On the other hand, we see Gogol's transformation becomes more apparent when his relationship with Maxine comes to an end after his father's death. Although Maxine expresses her sympathy toward Gogol but he himself knows all these have no meaning for Maxine. She offers him to get away from this mournful environment to New Hampshire where they planned earlier to go together on a vacation. But Gogol refuses as he is concerned about the rituals that a Bengali family has to maintain after a near one's death. Being uncomfortable with her, Gogol again refuses to allow her with the family trip to Calcutta for the purpose of scattering Ashoke's ashes in the Ganges. Finally Gogol steps out of Maxine's life. So his dissatisfaction and unstable position regarding his relationships partly result from his Bengali upbringing. Complexities arise again when he gets married to Moushumi, a girl born in England, raised up in America with a Bengali heritage. His settlement with a girl of his own heritage and culture gives him temporary happiness. In order to make their parents happy, they fulfill all customs of marriage and try to be a happy couple, but a kind of dissatisfaction broods over them. Ashima's transformation gets completed after the divorce of Gogol and Moushumi. For her prejudice toward American culture she never liked Ruth or Maxine as her daughter in law but later she realizes that the second generation Bengali people stand too far in their thinking. They love to enjoy individual freedom and prefer to lead a flexible life. Moushumi is entirely different from Ashima. The family bindings become a burden for her yet Moushumi's character cannot be completely separated from the shadow of

'Bengaliness'. Being a hybrid child and the second generation immigrant she herself also suffers from such complexities related to identity, cultural aspects and relationships. Her past relationships also remained incomplete as she feels offended by the hypocritical behavior of her former fiancé Graham who criticizes Bengali culture and customs he encountered in Calcutta before his friends but acted as if he liked it. To Moushumi, that insult was unbearable to a great extent and she decides to break the marriage off. She admits openly her new relationship with Dimitri and moves on. Ashima feels relived at Gogol and Moushumi's practical decision of marking an end to the unsuccessful marriage.

The Namesake chronicles the story of a Bengali couple who migrated in the mid 60's from Calcutta to America and settled down there. This novel clearly reveals the complex process of diasporic relocation including the identity formation of the first and the second generation Bengali immigrants. Stuart Hall in his essay "Cultural Identity and Diaspora", argues that identity undergoes a transformation as it can not be a stable essence. The fluid nature of identity makes it move with the wave of production and reproduction. Hall considers cultural identity as something "becoming as well as being"(225). It is related to the past and certainly constructed through the historic experiences. *The Namesake* foreshadows Hall's notion that cultural identities of Bengali diasporic people are found to be reconstructed after several acculturation process. It appears explicit that the second generation immigrants suffer immensely for their dual identities than the first generation immigrants do, for they live nowhere. Being the diasporic subject Ashoke and Ashima are dislocated and again relocated in America. The long process of their adaptation finally leads to a peaceful existence in the host land with past memories of Bengali ancestry. But Gogol and Moushumi encounter greater complexities for being a hybrid subject in the host country that ultimately lead them to face emotional discord. Their Bengali ancestry reminds them of their traditional values that they cannot give up completely, rather they try to uphold both the Bengali and American culture to a certain extent. Their hyphenated identity seems to be a burden for them, at the same time being a hybrid subject they have been given freedom to experience life from a cosmopolitan viewpoint. Throughout the novel, the generational difference is reflected significantly to mark the distinct attitude of the first and the second generation immigrants regarding their diasporic experiences. Apparently the diasporic situation may be taken as frustrating, yet Jhumpa Lahiri explores the immense opportunities or advantages of the migration life in a developed country. Life changes so

rapidly along with cultural practices, religious strictness, hobbies, natures and mental stance to make a familiar place in an unfamiliar world.

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Creating the Archetypal Paradigm for Indigenous Novel: R.K. Naryan's *The Guide*

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Abstract

Many novels by R.K. Narayan are characteristically based on an archetypal paradigm which relates to the Hindu mythological texts, the Vedas and puranas. He frequently used myths and legends from such texts to create the archetypal paradigm in a Hindu interpretive framework. The pattern of the puranic tales was adopted ironically to fit the imperfect present of the novels into a more appealing mythological past. This paper focuses on examining the plot and the narrative pattern of one of his most famous novels, *The Guide*, to bring out the elusive techniques he adopted to create the archetypal paradigm. But it does not necessarily propose that this effort by Narayan rendered *The Guide* into a mere religious text. Rather, it is more appropriate to call it an exclusively indigenous one.

Keywords: *kama, karma, moksha, samsara,* archetypal paradigm, Hindu mythology, puranic pattern

Narayan's novels are . . . religious books . . . and intensely Hindu.
— V.S. Naipaul, *India: A Wounded Civilization*

In a life span of ninety-four years and over seven decades of literary activity, Rasipuram Krishnaswami Narayan wrote quite extensively on Indian culture and philosophy in his novels. Characteristically many of his novels often created an archetypal paradigm in a deceptively simple language which relates to Hindu mythological texts, the *Vedas* and *puranas*. Narayan frequently drew on myths and legends from Indian mythological texts and used their contents and themes in his novels to create the archetypal paradigm, a prototypical domain of the forms and functions of those myths. In *The Guide,* for instance, an in-depth analysis of the narrative pattern will reveal its resemblance with traditional narrative qualities of the Hindu epics and *puranas*. He manipulated these contents, themes and narrative patterns to recreate, in his own words, "illustrations of the moral and spiritual truths enunciated in the *Vedas*" (*Gods, Demons and Others* 4). This paper examines the elusive techniques Narayan used to create the archetypal paradigm in *The Guide*.

Needless to mention, the author does not necessarily propose that the creation of this archetypal paradigm rendered *The Guide* into a mere religious text as V.S. Naipaul stated (*India: A Wounded Civilization* 13). Rather, it is more appropriate to call it an exclusively Indian or indigenous one. Therefore, this paper will also try to examine how Narayan developed the indigenous pattern by using irony to fit the imperfect present of the novel into the idyllic mythological past of the religious texts.

In his *Gods, Demons and Others*, Narayan analyzed the ancient Hindu scriptures and identified some major narrative strategies:

> (a) A poetic setting, usually a cool grove on a river bank, where the assembled sages question, and seek illumination from, a visitor who comes from afar- "Each tale invariably starts off when an inquiring mind asks an enlightened one a fundamental question."

> (b) A dramatic, dialogue-based question-and-answer format, starting from an initial exploratory question, and going on to more probing questions and more revelatory answers, and

> (c) A layered narrative structure with time shifts- "the *Ramayana* was written by Valmiki, who heard the story from Narada, who got it from Brahma, who had heard it from the Great God himself at a divine council. And so each tale goes back and further back. . ." (Qtd. in Sen 21)

As a matter of fact, the archetypal paradigm in *The Guide* was created maneuvering all these formal and contextual features in a Hindu interpretive framework, a framework that requires the true understanding of the nature of Hindu religious practices in order to interpret a particular action or idea. The formal aspects of the novel imitate the 'cool grove', the 'enquiring mind' approaching the 'enlightened one', dialogue-based sessions between the *guru* and the *sishya*, (Sen 27). In the content of the novel, we find *kama*, *artha, lobha* and their karmic consequences, indications of reincarnation and *moksha* etc. imitating the pattern of the puranic tales. But along with this, Narayan created a difference between the mythological past and the imperfect present by subtly inducing an irony and turned the whole story into a parody of the perfect mythological past. This technique helps maintaining the difference between the two ages while exploiting the archetypal paradigm making a passage for the core indigenous pattern of the novel.

At the same time, R.K. Narayan's Tamil origin and adherence to South Indian settings turns out to be crucial in interpreting the archetypal

paradigm *The Guide* has created when researchers like Ganeswar Misra finds the similar narrative pattern of *The Guide* in an ancient Tamil epic *Manimekalai*. This narrative technique takes us 'backwards and forwards through time' (Qtd. in Sen 22), which is exactly what we get in the narrative pattern of *The Guide*; a multilayered text that often digresses, and offers an inquisitive framework referring to the stylistic techniques of the *puranas.* As H.H. Wilson remarks:

> The invariable form of the *puranas* is that of a dialogue, in which some person relates its contents in reply to the inquiries of another. This dialogue is interwoven with others, which are repeated as having been held on other occasions between different individuals, in consequences of similar questions having been asked. (585)

This narrative technique of the *puranas*, the time shifts and multiple layered narrative strategy, is used in *The Guide* from the very beginning. The first chapter begins in *medias res* where Raju has just been released from the prison and mistaken for a *swami* by Velan. But the chapter also contains a portion of Raju's story about his childhood which he tells later to Velan. The first part of Chapter Two continues with Raju's childhood story but the second part moves forward to the incident of Velan's sister who is reluctant to marry. The third chapter again continues with Raju's childhood story in Malgudi, but again in Chapter Four we are in the village of Mangala with Raju giving serious attention to the education of the children of the village. Chapter Five again takes us to Malgudi station when he first met Rosie and Marco. The next chapter shifts to the present again when people of Mangal village are facing a severe drought. From Chapter Seven to Chapter Ten, Raju continues his confessional tale of his relationship with Rosie. Chapter Eleven shifts to the present again when he finishes telling Velan his life story and he pays his penance. Narayan employs the first person narrative in the chapters when Raju reveals his past, but a third person omniscient narrator for the rest of the story. All these techniques show Narayan's inclination for time shifts, layered narrative and episodic structure as found in the *puranas*. A glimpse of this inclination for time shifts and transcendence is found in Raju's practice of ascribing imaginary timeline for the archeological events and places that he described to the tourists. He said, "the age I ascribed to any particular place depended upon my mood at that hour" (44). This contradicts Marco's effort to explore the past scientifically against Raju's practice of deliberately mystifying the time immemorial, the time of the *puranas*, so much so that he even does not bother remembering dates.

Moreover, Narayan relocates the ancient paradigm in the postcolonial India of today in an indigenous pattern. His characters seem to be prototypes of this paradigm who are both individuals and types at the same time. In his paradigm, Marco appears as the 'demon', whose imagination is fired by 'only dead and decaying things' (Narayan 64). He is the *rakshas* or *asura* like Ravana who abducts Sita. In contrast, Rosie symbolizes:

> the living heritage of India which is experienced, not merely studied . . . she is the snake-woman and as such symbolizes the mysterious, the unconscious, the mother goddess, the eternal renewal of life by the earth, like a snake sloughing off one skin or one life after another . . . the archeologist suggests the Aryan, the West, science and intellect. Whereas Rosie suggests the Dravidian, the primal, the mystic (Rothfork 31).

Rosie is also the *Swayamvara* like Draupdi in *The Mahabharata*, the princess choosing her husband and having the conflict between the idea of individuality and the duty of the archetypal wife. Raju's character, as Sankaran puts it, can be seen as an example of the 'trickster-sage' a characteristic of some Hindu myths, which is not an evolved soul, therefore pretends to be one (150). But in due course, playing his roles and being transformed by his experiences, the trickster becomes a real sage. Raju is the trickster guide, compelled to adopt the role of the spiritual guide, and with an interesting and ironical twist, becomes a real one. When a journalist asks Raju whether he has always been a *yogi*; "yes" he replies, "More or less" (Narayan 200). He has always been a guide showing people what they want, whether as a tourist guide or as a *swami*, a spiritual guide. His atonement to end the drought is also reminiscent of the story of the sage-king Bhagirath found both in *The Ramayana* and *The Mahabharata*. Bhagirath also conducted serious atonement to bring down the goddess Ganga (Sen 24).

As can be seen in many mythological texts, gods and goddesses descend on earth to grant the wish of their favorites, or as avatars to destroy the evil or save humanity from the peril. Some of these avatars, like Sri Krishna, are not aware of their divinity or the past life at first, but later they find their roles as the saviors of humankind. In Sri Krishna's case, he was reminded of his duties by Sandipani Muni (Gangapadhya 140). The same structural patterns and thematic concerns are adopted in the narrative structure of *The Guide*.

Evidently, the opening scene of *The Guide* has that traditional idyllic setting- an abandoned temple by the side of the river. The scene soon

delves into the dramatic dialogic format with Velan. Other archetypal elements - the multi-layered narrative, the time shift, the interwoven digression, the penance taken to save humanity etc. all appear one by one.

However, in contrast to that puranic framework, Raju is not the holy one. Rather, he is the rogue who is ready to fraud the simple-minded villagers to become the spiritual *swami* for food and shelter. This gap between the mythic past and the flawed present is dealt with an irony by Narayan. Raju is involved in a conversation with Velan that becomes a parody of the spiritually illuminating conversation of the *guru* with his *sishya* found in the *puranas*. This irony serves as a bridge between the mythic past and the imperfect present creating the archetypal paradigm. As Narayan puts it, "The essence of sainthood seemed to lie in one's ability to utter mystifying statements . . . He was dragging those innocent men deeper and deeper into the bog of unclear thoughts" (39).

In essence, Raju's whole life, like that of Sri Krishna's in Hindu mythology, is divided into two parts. While Sri krishna moves from Vrindaban to Dwaraka, Raju moves from Malgudi to Mangala. The first portion of Sri Krishna's life in Vrindaban is that of *leela* and *kama,* but after he is reminded of his duty, the second part of his life in Dwaraka is strictly of moral obligations and religious duties. In Raju's case too, his life in Malgudi was of a life of *kama, artha,* and *lobha*, whereas the life in Mangal is that of a *sanyasi* though a reluctant one. Most interestingly, Rosie is completely absent in the second part of Raju's life, like Radha's absence in the later part of Krishna's life. In *The Guide*, as in Sri Krishna's life, *jñānaban* or the arrow of knowledge splits and dispels the *madanaban* or the arrow of the Kamadeva, the god of desire.

Furthermore, Raju refers twice to Devaka in *The Guide*. The Devaka in Hindu mythology is a great king who is the son of Ahouk, father of Sri Krishna's mother Devaki ("Devaki"). But in Raju's story we find an ambiguous Devaka "a man of ancient times who begged for alms at the temple gate every day and would not use any of his collections without first putting them at the feet of the god" (Narayan 13). This Devaka is a mythic prototype of Raju who resembles the last phase of Raju's life when he has to depend on others for food. Not to mention, in his autobiography *My Days,* Narayan tells how he found the idea of the story of *The Guide* in an incident around 1956-57 when he saw, A group of Brahmins stood on the parched bed of the river Kaveri, submerged up to their knees in water which had been ferried to the spot at great cost, fasting and chanting *mantras* for eleven days and nights. On the twelfth day the rains came,

and the countryside was saved from impending famine" (221). It is obvious that Narayan later recreated the incident in *The Guide* as Raju's ritual fasting for rain.

In addition*, The Guide* mentions *Bharatanatyam* several times and also the temple dancers, snake dance, Nataraja, and the religious, spiritual connection of the dance. *Bharatanatyam* is a devotional practice, a sort of worship to Shiva or Nataraja through the dance, a descendant of an ancient cult of *devadasis* dating back to the prehistoric time ("Bharatnatyam"). The basic philosophy is to dissolve the dancer's identity by making her body an instrument for the expression of spiritual experiences and worship. Rosie belonged to a family rooted in this ancient cult of *devadasis* who were considered as public women. Therefore, she had temple-dance in her blood though it was stigmatized in modern India ("Bharatnatyam"). The concept of dissolving identity suggests the necessity of name-change from Rosie to Nalini. During the British colonial rule in India, when the Government tried to ban *Bharatanatyam* for its supposed association with prostitution, an American dancer named Esther Sherman migrated to India in 1930, learnt *Bharatanatyam*, and changed her name to Ragini Devi ("Bharatnatyam"). Thus *Bharatnatyam*, a strong element in *The Guide,* is not only an art, rather a form of interpretation of mythical and spiritual philosophy from the Hindu texts.

Therefore, changing Rosie's name to Nalini Devi suggests a return to the tradition. Nalini, in Sanskrit means "lotus" or "Padma" which is revered by Hindus for its association with the gods Vishnu, Brahma and the goddesses Lakshmi and Saraswati, and often used as an example of divine beauty and purity ("Padma"). The name Nalini also appears in *The Mahabharata* as one of the Sapta-Sindhava, the seven holy rivers-Vaswokasara, Nalini, Pavanai, Ganga, Sita, Sindhu, and Jambubani (Dowson 281). The name of Velan refers to a non-Brahmanical priest associated with Hindu deity, Murugan or Kārttikēya who is the Hindu god of war, the son of Parvati and Shiva, particularly popular in South India among the Tamil people ("Kartikeya"). Linked to his name is Cēyōn̠, the red planet Maṅgala which is the name of the village where Raju takes refuge as a trickster-sage.

In a like manner, the river Sarayu mentioned in *The Guide* has a mythological significance too and is mentioned both in the *Vedas* and *The Ramayana*. The real river flows through the Indian states of Uttarakhand and Uttar Pradesh and through Ayodhya, the ancient capital of Rama. Thousands of people take a dip in the Sarayu River at Ayodhya on Ram

Navami, the celebration of the birthday of Rama (Dowson 281). The imaginary setting of all his novels, Malgudi, is not a modern town either, rather a town with ancient history which works as a symbol of antiquity. Here Rama made the river Sarayu flow by scratching a line on the sand with his arrow, here Buddha preached the sermon of compassion (Basu 114). So, it becomes a perfect idyllic setting for the archetypal paradigm Narayan wants to create.

Furthermore, the doctrine of *karma* in Hindu philosophy does not consider the universe as a blind unconscious force or a world of chances, rather as a stage for the soul amid the pre-established *dharma* which keeps space for individual free will. But the great riddle of the suffering of human beings is solved by the doctrine of *samsara* or the birth-rebirth cycle. *Karma* appears to be the law of cause and effect in a spiritual and moral plane which upholds the cyclic vision of the creation of God. This cycle is the *mayic* world where all souls must learn the *karmic* consequences to attain liberty from the cyclic world of reincarnation or *samsara chakra*. Narayan has exploited the *karmic* philosophy and conceptualized the theory of *kama* and *artha* as depicted in *Bhagbad Gita* to create the archetypal paradigm. He explores the paths of detached, disinterested actions or *nishkam karma yoga*, the path of knowledge or *jñāna yoga*, the path of devotion or *bhakti yoga* as depicted in *Bhagvad Gita* to lead Raju towards attaining the ultimate liberty of soul or *moksha*. Narayan depicts Raju as struggling between the life of *kama* and *artha*, and the selfless, disinterested path of *nishkam karma yoga*. His life from the self-seeking love of Rosie, the life of *kama* and *artha*, to the self-annihilation for the cause of humanity indicates that transition from *bhakti* to *nishkam karma yoga* (Rothfork 29). Narayan ironically puts Raju in a framework where he himself is not aware of the grand design of karma revolving around him. As Raju says to the American producer - "I am only doing what I have to do; that's all. My likes and dislikes do not count." Therefore, in various phases of his life we often find him promoting the interests of others, sometimes promoting Marco's research or Rosie's dancing talent, the welfare of his jail mates and the strife-torn villagers of Mangal by giving them hope and turning their minds to religion, and eventually, sacrificing his own life for a greater cause much beyond the scope of a mere trickster. He says:

> I never said, 'I don't know.' Not in my nature, I suppose. If I had had the inclination to say, 'I don't know what you are talking about,' my life would have taken a different turn. Instead, I said, 'Oh, yes . . .' (41)

This sacrifice correlates with the *jñāna yoga*, when Raju triumphs over hypocrisy, and the light of knowledge wipes out all the blackness of his past life of *kama, artha,* and *lobha,* when "the morning sun was out . . . a great shaft of light illuminated the surrounding (247)" and "He realized that he had no alternative: he must play the role that Velan had given him (33)"

Another example of using the mythic past to create the indigenous pattern in *The Guide* is a metaphoric representation of Hindu philosophy of four stages of life or *varnasrama* as mentioned in *The Mahabharata*. The four stages include *brahmacharya* or the life of the disciple, *garhasthya* or the life of the householder, *vanprashta* or the life of the recluse, and *sannyas* or the life of the ascetic. These four stages of the ideal life represent the fourfold objectives of life, *kama* or enjoyment, *artha* or wealth, *dharma* or ethics and *moksha* or liberty from the cycle of reincarnation. Raju's early life represents the *brahmacharya* or disciple phase where he learns from his father, listens to a story from his mother, woks as a vendor in the platform and eventually becomes 'Railway Raju'. When Raju tells Velan the story of Devaka, he wonders "How could I recollect the story heard from my mother so long ago? She told me a story every evening while we waited for Father to close the shop and come home" (Narayan 13). He becomes a man of affairs in the *garhasthya* or householder phase when he develops an illicit relationship with Rosie, starts living with her, and becomes her corrupt manager and abandons his mother and old friends like Gaffur. This phase of Raju's life is overwhelmed by *kama* and *lobha* that awaits karmic consequences. But he has done some good things too, like helping Marco and satisfying his customers. In the prison, he steps into the third phase of *vanprashtha* or that of the recluse, and becomes the fake *sawami* in the last phase, *sannyas*. As a tourist guide, he often gave his tourists wrong information and thus misled them. As Rosie's manager he committed indifferently, now as a fake guru he must pay the penance of *karma* in the last phase, and only through *nishkam karma* or self-annihilation, he can attain moksha. This is exactly what Raju does, he defends his *dharmik* integrity and decides for self-sacrifice, "For the first time in his life he was making an earnest effort . . . He felt suddenly so enthusiastic that it gave him a new strength to go through with the ordeal" (Narayan 195). Thus, the narrative structure or the form of the novel corresponds wonderfully with its archetypal paradigm. In the last phase a regeneration is suggested which proposes a mystic reincarnation "They held him as if he were a baby. Raju opened his eyes, looked about . . . (247)" But now he has stopped seeing with his outward eyes, and has

started to see with the *Ājñā* or third eye of wisdom which suggests *moksha*.

Equally important, R.K. Narayan manipulated the *Vedic* tradition of the *guru-sishya* relationship in his novel. In *Vedic* philosophy, a guru is the unification of the trinity of gods, Brahma, Vishnu and Shiva. The relationship between Raju and Velan ironically corresponds with the mythological tradition. But Narayan's humour and irony turned the relationship into a parody of the mythological past as depicted in the *puranas*. Raju deceives Velan as a fake *swami*, but that does not prevent Velan to attain his spiritual comforts and development as he showed steadfast devotion to Raju who himself is inspired by his devotee Velan to walk through the path of self-annihilation or *niskham karma* and eventually attain *moksha*. Whether Raju attains moksha is an ambiguous question, whether he dies or lives is also ambiguous. But that ambiguity of the denouement does not affect the archetypal paradigm which has already been created.

All things considered, it becomes quite obvious how R.K. Narayan deployed the pattern of the puranic tales in a Hindu interpretive framework to create the archetypal paradigm. But this framework has been adopted quite ironically to fit in the imperfect present into a more appealing mythological past. Even the English language has also been appropriated purposefully to blend in with this framework. Needless to say, that technique does not render *The Guide* quintessentially into a Hindu work, rather the whole archetypal paradigm serves as a matrix for the indigenous elements of the novel. As Narayan put it in *The Reluctant Guru,* "My novel *The Guide* was not about the saints or the pseudo-saints of India, but about a particular person" (5). Nonetheless, the great appeal of the novel mostly depends on his vigorous creation of the archetypal paradigm and the use of irony to make a parody of mythic possibilities in an imperfect present.

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Intimate Terror and Violence in Toni Morrison's *The Bluest Eye*

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Abstract

This article **"**Intimate Terror and Violence in Toni Morrison's *The Bluest Eye*" is a study of terror and violence specifically the intimate terror and violence as presented in the novel. In this study, the causes as well as the outcome of these two issues will be analyzed. The foremost attention however is focused on Pecola, the protagonist of the novel who is twice raped by her biological father Cholly. Along with the victims' psychology, trauma and cognitive behavior, the offenders' psychology and background will also be analyzed. Racism, frustration, anxiety, deprivation of basic needs and rights, lack of scope to enter into the mainstream society, oppression, atrocity, mistreatment, intoxication and above all the terror and violence from outside the family are the reasons behind the violence they unleash. Therefore, ins and outs of the dreads and vehemence of Toni Morrison's *The Bluest Eye* will be analyzed in this paper.

Keywords: Terror, Violence, Racism, Self-hatred, Beauty concept

The Bluest Eye, the maiden novel of Nobel Laureate Toni Morrison is the proclamation of a revolutionary phase in the history of American Literature. Even though the novel is a narrative of 1940's America and the constitution of the USA does not authorize any slavery, the situation of the black community is not much different from the period of the slavery. More understated and cerebral terror and violence are observed in *The Bluest Eye*. Pecola, the central character, her parents Cholly and Pauline, all have been smashed by their parents as well as other closer ones. Low self-esteem, racism, drinking, poverty, abuse, abhorrence, incest, pedophilia and disgrace can be linked in one way or another, to the central point of intimate terror and violence of *The Bluest Eye*.

The novel demonstrates several forms of intimate terror and violence inflicted on Pecola Breedlove, the protagonist who is an eleven year old poor and black girl living in Ohio, Lorain. Pecola is a calm and submissive teenager with a complicated existence in her world, and whose parents are persistently combating both verbally and physically. Likewise, the novel

shows through flashbacks that not only Pecola but also her parents Cholly Breedlove and Pauline Breedlove in young age had to face abhorrence and hardship inside and outside the family relations. In *The Bluest Eye*, it has been noticed that physical, sexual, psychological and verbal violence against near and dear ones create an intense and sharp fear in Pecola. In this novel, however, racism is the actual origin of close affliction and aggression of any form.

Initially, the paper elucidates the surname of Pecola and her parents that is Breedlove. It has been paradoxically used as their family surname since it is very obvious from the recurrent incidents of the novel that they do not love one another. They absolutely live in a family where the family members do not have any emotion for themselves and for the closest persons of the family. In the meantime, they are living in a society that also does not breed love for the underprivileged community. The real scenario of 'Breedlove' family that is completely shattered and unhealthy for living is presented in the novel:

> The only living thing in the Breedloves' house was the coal stove, which lived independently of everything and everyone, its fire being "out", "banked", or "up" at its own direction, in spite of the fact that the family fed it and know all the details of its regimen. . . . (Morrison 27)

In *The Bluest Eye*, Morrison has portrayed the devastating side of a broken and poor family. In the novel, she has presented the public scrutiny of the unstated concern of child abuse. However, Mr. Henry's offensive conduct with Frieda is a subtle preparation or prediction of Cholly's rape of his own daughter. In spite of being the father, Cholly's offense is a physical manifestation of the social, psychological and personal fright and havoc of his life. From the study it has become apparent that Pecola suffers compulsion, suppression and above all, lack of love from parents in the Afro-American society. If there were love and happiness in 'Breedlove' family, Pecola definitely would not ask Claudia and Frieda ". . . how do you get somebody to love you?" (Morrison 23).

The extreme presence of the physical and sexual violence in *The Bluest Eye* not only creates terror in the characters of the novel but also in the readers. As black women are the most vulnerable and doubly colonized in white dominated social structure, Barker's concept of gender studies is worth mentioning in this context. According to him:"Men are commonly held to be more 'naturally' domineering, hierarchically oriented and power-hungry, while women are seen as nurturing, child rearing and domestically inclined" (Barker 283-284).

In the novel, Morrison repeatedly displays Cholly and Pauline's quarrel which is really unhealthy and horrible. The narrator illustrates this by stating "Cholly and Mrs. Breedlove fought each other with a darkly brutal formalism . . . ." (Morrison 32) Pecola is so horrified at her parents' brutal behavior that one morning she hides herself under the quilt when they start quarrelling and beating each other. It seems that it is a kind of entertainment and diversion in doing so. Pauline and Cholly's relationship has been totally damaged similar to the broken relationship of Hester Prynne and Roger Chillingworth of *The Scarlet Letter* by Nathaniel Hawthorne though Chillingworth does not attack Hester physically; instead he humiliates his wife psychologically and socially. The difficulty is that children of such parents are afraid of the surroundings. In addition, it opens the path of disintegration of the family that leads the children to isolation, loneliness, loss of identity and ending their growth. Sammy, their elder son has escaped from the house twenty-seven times by the time he is only fourteen years old and Pecola often prays to God to make her disappear. They have no respect to their parents and it is quite impossible in this situation too. Their parents' destructive manner ruins their childhood innocence as children follow their parents. Pecola's brother Sammy's behavior proves it when he also attacks his father by saying: "Kill him! Kill him!"(Morrison 33).

Again, the most heinous terror and tumult in the life of any human being is the rape of a daughter by her own father whereas a father should provide the most protective and secured place for a daughter. Clinical psychiatrist Judith Lewis Herman illustrates the horrific situation of this form of violence in *Father-daughter Incest*, a celebrated book on incest and its subsequent traumatic disorder. In this connection, an extract from *Father-daughter Incest* is relevant in order to realize the traumatic situation of Pecola as well as the behavioral problem of Cholly:

> Father-daughter incest is not only the type of incest most frequently reported but also represents a paradigm of female sexual victimization. The relationship between father and daughter, adult male and female child, is one of the most unequal relationships imaginable. It is no accident that incest occurs most often precisely in the relationship where the female is most powerless. The actual sexual encounter may be brutal or tender, painful or pleasurable; but it is always, inevitably, destructive to the child. (Herman 4)

From the novel, we come to know that Pecola has been twice raped by her father though his motives are vague. According to some critics it is

ostensibly a blend of both love and abhorrence. Surprisingly, Claudia thinks that Cholly might have shown love to Pecola but how she can think this brutal act in this way really raises question. Pecola has become almost insane for the cruelty of her father. It is equally worth mentioning that Morrison puts emphasis on Cholly's victimization in the society rather than emphasizing his terrible deeds. We observe that he continuously commits various horrible acts. He fights with his wife violently in front of the children, beats his wife and he even burns his family residence. All these horrific actions that he commits on his intimate persons are definitely the outcome of the previous violence caused to him either by the white community or by his own blood relations. However, the most ghastly act he has committed in his entire life is the act of raping his daughter.

Though Morrison has used loving and passionate language while narrating the incidents of rape, the actual rape of Pecola is terrifying and devastating. The act of rape on a daughter in *The Bluest Eye* remains unpardonable irrespective of the novelist's portrayal of it or not. It cannot be justified by sweet and tender language though his first abnormal experience of intercourse may plant the seeds of this monstrous act. Abandonment by his parents when he is an infant, fear of being beaten by aunt Jimmy, her death, the humiliation in the woods and later his quest for his father are agonizing to Cholly. Yet, his act of violence cannot be approved on account of his terrible past. From his own experience of his father's abusive treatment, he seems to have inherited the idea of abusing the children. Therefore, he applies it to his own offspring consciously or unconsciously.

Here, a subtle relation can be observed in the behavioral problem of King Lear and Cholly after being refused by their dear ones although their social and hierarchical perspectives are entirely different. Cognitive study of King Lear's behavior is required after he has been rudely treated by his daughter and her servants. King Lear's crazy behavior and aggressive tendency reflect the two main drives that make up the id and ego. King Lear and Cholly's ways of outburst are different but they both insanely react against their daughters. King Lear has failed to check his ego and becomes irrational that makes the situation precarious. Similarly, Cholly is unsuccessful in controlling the irrational portion of his psyche as well. The following lines from *King Lear* reveal the connection of King Lear and Cholly when Lear angrily summons nature goddess to curse his daughter Gonneril:

> Dry up her the organs of increase,
> And from her derogate body never spring
> A babe to honor her! If she must teem,
> Create her child of spleen, that it may live
> And be thwart disnatured torment to her! (1.4 L278-282)

It is to be noted that Cholly subconsciously knows, hating white people will mess him up. Hence, his all contempt, anger, violence go to his family members. Cholly blunders to admit the truth and becomes antagonistic to his wife and children. However, in the 'Afterword' of *The Bluest Eye* Toni Morrison defends Cholly's act of raping his daughter:

> It is interesting to me now that where I thought I would have the most difficulty subverting the language to a feminine mode, I had the least: connecting Cholly's "rape" by the white-men to his own of his daughter. This most masculine act of aggression becomes feminized in my language, "passive", and, I think, more accurately repellent when deprived of male "glamour of shame" rape is (or once was) routinely given. (172)

For this reason possibly Tessa Roynon in "Sabotaging the Language of Pride" argues that "men's voyeurism is itself a kind of violation" (43).

Now let us deal with Pecola whose life is mostly damaged and tormented in *The Bluest Eye*. This little girl who is a catastrophic prey of the Afro-American society has been deprived of the basic needs and rights in all spheres of life. She has been mistreated, vexed, tortured by almost everyone she meets and lives with. It has been already known that she has been violated by her father. Meanwhile, her mother severely tortures her for her pregnancy. The narrator refers to a conversation about Pecola in the last section "Summer". From the conversation of the neighboring people of Pecola and MacTeer sisters we learn about her turbulent state for her pregnancy caused by her own father. The unknown speaker reports: "Well, it probably won't live. They say the way her mama beat her she lucky to be alive herself" (Morrison 149). It is also as a consequence of the exploitation of the white people. Her mother has also been double-colonized in the white dominated society and finding no alternative she treats her daughter severely. All these dread and severity ultimately have led Pecola to give birth to a dead child and finally to become insane. Pauline's childhood is also pathetic since she has not been adored by her parents and siblings too. Truly speaking, in a large black family that is also poor, love is an invisible feeling. Pauline is the ninth of eleven children of her parents. She has no nickname and anecdotes about her.

Nobody talks about her food choice and she does not feel at home anywhere. By the time of the novel's setting, adult Pauline and Cholly have both lost the gentle and loving behavior for their children. Pauline is also obsessed with the white beauty concept like her daughter as she starts to go to cinema and gripped with Greta Gerbo's[1] style. She has even lost her teeth in a parlor due to her craving to be like the white movie stars. Pauline feels alive and happy only when she is working for a rich, white family who tenderly call her 'Polly'. It shows how parenthood, the most precious bondage of human beings is cracked because of the racial violence in America.

The Black community in the USA is forced to believe that they are outcasts. Toni Morrison states: "Outdoors, we know, was the real terror of life" (11). This terror is the physical condition of their status. Cholly, Pauline, Pecola and other characters of the text are the products of the American culture. Cholly has been compelled to do what he has done throughout his life time. In fact, the entire white world has contributed to make Cholly. It has been recurrently seen in the novel that all frustrations, apprehension and dispossession of the people are essentially due to racism. Throughout the novel we note the picture of being despised, abandoned and trivialized. Here racism is the underworld villain who is to blame for their present condition. Moreover, Black people's acceptance of white ideology as an ideal one and their inability to adopt these ideologies eventually lead them to hate themselves, to hate their own family members and to hate their own community. In fact, all are victims of the tragic circumstances of the racist American society. The following passage from "Treatment of Violence: A Study of Morrison's *The Bluest Eye* and *Beloved*" explains the subordinate place of the black people:

> This entire process of subjugation of the black by the white leaves the black psychologically crippled. This makes them think whether they exist in this world as human beings or not. They are constantly reminded of their marginality. In order to sustain their domination, the white, after the demise of slavery, propagated their own stereotypes concerning beauty. One who qualifies the test as prescribed by the masters is deemed beautiful, and one who fails is considered ugly. In this way, the white hurt or harm their black objects in a subtle psychological way. (Kochar 34)

In *The Bluest Eye*, we observe that the blacks are prisoners of the white concept of beauty in the American society. As a result, black people suffer a lot like Pecola and become ferocious like Cholly. ISA[2] and RSA[3] are used to dominate the blacks by the white standard of beauty. The good

looks of a person can be articulated in different ways on the basis of looks and personality. It contradicts the standard, because beauty is no longer just an individual's outlook but it has been made into an unrecorded rule, a standard made by the privileged group of the society. The most significant tenet is that in order to be good-looking, girls have to look just like white doll with blue eyes, radiant pink skin, and blonde hair. And if they are not, they are not attractive and adorable. Pecola's miserable condition shows that 'American Dream'[4] has not been offered to everybody. The boys who are teasing Pecola are also black. By teasing her they are showing self-abhorrence towards themselves which they do not understand. Their verbal violence against Pecola shows: ". . . their contempt for their own blackness that gave the first insult its teeth" (Morrison 50). Seeds of inferiority complex are planted by the stereotype white beauty model. This self-hatred creates an immediate dread and vehemence among the characters of the novel.

It is to be noted that in *The Bluest Eye*, the victims' anger goes to others below their status as they cannot show it to the whites. In other words, intra-racial violence occurs because of inter-racial violence. The blacks are marginalized by the whites since they are considered as 'Other' by the whites and therefore they remain out of the mainstream society in America. However, there is no controversy regarding the fact that individuals' behavior is severely shaped because of racism. Here, Maureen Peel's entrance to the school where Pecola and MacTeer sisters study is worth mentioning. She represents the influence of beauty and commodity culture. Her demand is based on the fact that her look is akin to the white beauty standard as she is a high yellow girl. Therefore she owns a superiority complex and hates Pecola as well as other black boys and girls considering them to be ugly. But the amazing thing is that Maureen herself is not accepted in the white community as she is not entirely white, rather yellow. Hence, she has to get admitted in a black school where she is considered the most beautiful and loved by all. Attaining this position she shows her arrogance towards other girls and boys that raises Pecola's self-abasement stronger than ever. Pecola has even been personally attacked by Maureen about her father's sleeping without cloths that creates an affliction about her family and makes her upset.

The *Dick and Jane*[5] books read by children in the school clearly define beauty from the white point of view. More importantly, these books show that happiness can only be attained through beauty and that an ugly person can never be happy or good. So, with the intention of being beautiful,

Pecola drinks milk in a Shirley Temple[6] mug thrice in a day while staying at MacTeer's house. She thinks that beauty is the only way to solve all her problems. She feels that if she becomes beautiful, her parents will no longer fight, her family will not be poor and her father will no longer be a rapist. Her desire for living in a happy family still remains unknown to her. For this mindset certainly Pecola is not responsible at all. The social system is solely responsible for the horrible experiences of a little girl and she has reached to this state of mind through minor and extreme events in her life.

Pecola's meeting with Geraldine also intensified her passion to be beautiful. When she has been provoked to enter into Junior's house and he killed his cat, Pecola has been thrown out by Geraldine, Junior's mother. She supposes that Pecola is the killer of the cat as she does not fit the standard of beauty. She even does not bother to ask Pecola what has happened and she simply assumes Pecola is bad. She awfully rebukes Pecola by saying, "You nasty little black bitch. Get out of my house" (Morrison 72). Mrs. Geraldine has a great attempt to cross the threshold to the so-called mainstream society. Therefore, she hates everyone of her own race and her attitude to Pecola is the reflection of this thought.

Pecola's yearning to be beautiful shows how the blacks ruin their family bondage by unconsciously accepting the beauty concept of the white community. This yearning shows how Pecola is afraid of her present vulnerable situation and desires a relief from this situation by means of the idea of so-called beauty. Whilst Pecola becomes an insane, she becomes more obsessed with the idea of being more and more beautiful, especially she is mostly engrossed with the quest of a blue eye, then bluer eye and thereafter the bluest eye. A rigid standard of beauty is established with the insanity of Pecola. She thinks that she would not face any kind of violence from her parents if she were a beautiful girl as stated in the set standard. Pecola is so traumatized that it is in fact impossible to heal her mental breakdown; and her distressed situation really shocks everyone. Pecola does not realize that beauty is not the answer to her problems.

In conclusion, it can be said that in *The Bluest Eye* intimate terror and violence is extremely presented. Cold and inhospitable relationships among the innermost persons of a family, quarrelling, abandonment, self-hatred, physical, verbal and sexual abuse have been observed in this study that create dread and fear among the persons. Cholly and Pauline fail to restrain their animas and show it aggressively to each other. Even they express their anger and frustrations to their children irrationally. Their

failure to cope up with the society and accept the reality leads them to their ultimate destruction. Cholly's violating his daughter is the worst expression of his animalistic activity and Pauline's subsequent beating to Pecola on due to her pregnancy is no better than this. That is why, eventual lunacy of Pecola is inevitable. However, we cannot avoid the problem of racism in the American society because discrimination, abandonment and deprivation from external forces cause the total collapse of human psyche. In this regard, Pecola and her parents are more or less traumatized since both their psychological states and rational states of mind have been totally broken. Cholly and Pauline learn nothing about love and affection in their entire lives. On the contrary, their daughter Pecola longs for love and affection but finally loses everything despite the fact that she looks for something unattainable in the real world but very much attainable in her imaginative world. Her hallucinatory word-play shows her ultimate pathetic condition along with the miserable condition of other characters in consequence of intimate terror and violence.

Notes

[1] Greta Garbo was a Swedish film actress and an international star and icon during Hollywood's silent and classic periods. She was nominated three times for the Academy Award for the Best Actress and received an honorary one in 1954 for her "luminous and unforgettable screen performances". She was born on September 18, 1905 as Greta Lovisa Gustafsson and died in 1990.

[2] ISA- Ideological State Apparatus that is a psychological weapon of imposing white concept of beauty upon the people of other races.

[3] RSA- Repressive State Apparatus that is a physical weapon of imposing white concept of beauty on other races.

[4] The American Dream is a national belief of the United States of America that is rooted with the declaration of independence of the USA. The American dream requires political and economic freedom as well as rules of law and private property rights regardless of family, color and class.

[5] Dick and Jane are the main characters in popular basal readers written by William S. Gray and and Zerna Sharp and published by Scott Foresman. These books are written for teaching children to read from the 1930s through to the 1970s in the United States. The main characters, Dick and Jane, are a little boy and girl while supporting

characters included Baby (or Sally), Mother, Father, Spot (originally a cat in the 1930s, but a dog in later editions), Puff the cat, and Tim the teddy bear.

[6]   Shirley Temple is considered as Hollywood's first child star who was born in Santa Monica in 1928. Her movie debut was at the age of three. She achieved a special Juvenile Academy Award in 1935 for her outstanding contribution to Hollywood film.

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Factors influencing the Performance of Small Scale Business in Bangladesh: An Empirical Study on Mirpur Area, Dhaka

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Abstract

The small business sector of a country provides flexible and fast satisfaction to the consumer needs, and helps to solve social and economic problems of both national and regional levels. The main objective of this study was to find out the factors affecting performance of small scale business. A questionnaire survey was conducted among 200 entrepreneurs and staff in Mirpur area, Dhaka, Bangladesh and random sampling technique was used. Cronbach's Alpha has been used to test the reliability of the data set and descriptive analysis was performed. Pearson correlation test and Linear Regression Analysis were also performed. After the analysis of data, this study found that business performance of small businesses had a significantly strong and positive relationship with all the factors (Entrepreneurial Skills, Competition, Financial Resources and Country Business Laws) and all factors were found to be the influential factors for explaining the performance of small scale business.

Keywords: Small Business in Bangladesh, Performance, Entrepreneurial Skills, Competition, Financial Resources, Country Business Laws.

1. Introduction

Small businesses are becoming one of the most important sectors of any economy in the world and getting the highest priority from policymakers for generating jobs and income, stimulating competition, sources of innovation, creating possibilities for business ventures which contribute to the socioeconomic environment of a country (de Kok et al. 2011). In a small business sector, customers get quick satisfaction of their needs (Tengeh 2013). These enterprises are easy to start, require only minimum capital, employ a comparatively higher number of people, and produce goods that meet local demands as well as contribute to export earnings.

There is no clear well known definition of small business, however according to Ayyagari, Beck and Demiruc-Kunt (2007), Small business are known to be owned and managed by individuals, having few workers. Whether it is a small businesses or not, it mainly depends on invested amount, number of people employed, yearly revenue, etc. Parameter of measuring size of a small business may vary based on the socioeconomic conditions of the country or even the region. The government of Bangladesh has defined SMEs in its latest industrial policy, the National Industrial Policy of 2016 which is given below:

TYPE OF INDUSTRY		REPLACEMENT COST (eXCLUDING lAND aND fACTORY bUILDING cOST)	NUMBER OF WORKERS EMPLOYED
Small industry	Manufacturing	BDT 7.5 million to 150 million	31 to 120
	Service	BDT 1 million to 20 million	16 to 50

SOURCE: NaTIONAL InDUSTRIAL PoLICY 2016

According to Chowdhury (2007), "About 7.81 million Small business are actively performing in Bangladesh which were contributing 25 percent of the total GDP, employing about 31 million people and providing 75 percent of household income various categories of Small business together contribute between 80% to 85 percent of industrial employment and 23 percent of total employment in Bangladesh". Small businesses in Bangladesh and across the world are still facing many challenges, in spite of their importance and significant contribution to economic growth which also hinders business development of the country. Entrepreneurs are being faced with various challenges with regard to the formation of business and sustainability, which tend to hinder their performance to achieve profitability. Tefula (2016) finds out that today's most start-ups find it difficult to adopt and develop different strategies that will lead to a high performance. Therefore, the main objective of this study is to identify the factors that influence the performance of small scale businesses in Bangladesh especially in Mirpur area.

2. Literature Review

The literature review section focuses on the major factors that influence the performance of small scale business; entrepreneurial skills, financial resources, country business laws, and competition in small scale businesses.

2.1 Entrepreneurial Skills and Performance of Small Scale Business

Entrepreneurial skills have a positive impact on the performance of a small business. Hisrich and Drnovsek, (2002) find out that in a small business managerial experience, education, knowledge and start-up experience are used to measure managerial competencies. Therefore, Lumpkin and Marvel (2007) realize that experience takes many guises and the width of experience also exposed the important factors which drive the positive performance of a new firm. Cant and Lightelm (2003) in a survey of small business failure maintain that entrepreneurs often have good ideas and are competent but they do not have a clue on how to run a business and have no underlying appreciation of business fundamentals. So lack of managerial competency was found to be the main reason why SMEs fail (Martin and Staines 2008). Abdel, Rowena and Robyn (2010) reveal that small business owner-managers have serious problems with financial planning because of very basic understanding of financial and accounting information. Kinyua (2014), researching on factors affecting the performance of small and medium enterprises tries to investigate the role of management skills, macro-environment factors and infrastructure on performance of small and medium-sized enterprises. The findings indicated that management skills were found to positively and significantly affect performance of SMEs; macro environment factors were found to significantly affect performance, and Infrastructure did not significantly affect performance of SMEs in the study area. Stephen, Njeru and Ibrahim (2014) further found out that the availability of managerial skills and experience affects businesses to a great extent while the respondents felt that training on managerial skills are required in the businesses. Additionally, the respondents reported that they do not get trainings on business management skills frequently. Overall, availability of managerial experience affected business performance only to a moderate extent.

2.2 Financial Resources and Performance of Small Scale Businesses

For starting-up a business, financing is one of the most fundamental problems of enterprise research, obviously financial capital is the most important resources needed for founding a business enterprise and afterwards operate (Neubauer and Lank 2016). Financial resources are vital for the acquisition of all other resources (Jacobs 2003) and access to finance is paramount for the performance of SMEs', as SMEs have to invest in new technologies, skills and innovation (Basil, 2005). Entrepreneurs who get financing successfully for their businesses can

prosper significantly. Additionally, those businesses that do not have access of proper financial resources face an obstacle in the growth of the business (Ngugi and Bwisa 2013). And also Asma Benzazoua Bouazza et al., (2014) also showed the positive relationship between investment and business performance which also performs as a significant impact factor of investment, entrepreneurial experience, business profile and culture. Mwania, (2011) did not consider other factors like finance which can affect performance apart from finance.

Mohammed Alkali (2012) finds that capital access and government support were significantly related to business performance of the enterprises and it also leads to improved business performance to a great extent.

2.3 Business Laws and Performance of Small Scale Businesses

The organizational setting within which the organization operates may be formed by a distinctive combination of forces, together with governmental, nongovernmental policy, legislative, regulatory, and legal frameworks. The performance of an organization is affected by the policy or regulatory context of the country which include specific laws and regulations that support or inhibit the institution's development (Burke, 1992). McFarland and Seeger (2010) said that "local governments should reduce delays in amending business regulations to enable quick and immediate growth of business." Owino et al (2013) make observation that government regulation about wages; taxation, licensing and others are among the important reasons why informal sector business develops. Without a careful attention, government policies could crush the small business sector of any economy.

2.4 Competition and Performance of Small Scale Business

The competitive standards change continuously due to consumers changing needs and expectations, technological developments and globalization of markets. Small businesses which are highly vulnerable to upheavals in the dynamic macro environment face challenges from larger organizations for their survival issue (Kodicara 2008). Over the years, the competition among SMEs has enlarged radically. Competition and sustainability for SMEs engage some factors such as changing market trends, changing technologies and emerging new management and organizational techniques. SME survival is increasingly dependent on a number of factors including resilience of SMEs to refocus some of their strategies and technologies (Gunasekaran, Rai & Griffin, 2011).

According to Scarborough et al., (2009), "Businesses have to make decisions which deal not only with business survival opportunities, but also with business development in a changing environment under dynamic competitive conditions where each competitor tries to do some extraordinary things to survive".

On the other side, SMEs need to recognize they must prepare for both domestic and international competition. Collaboration between SMEs could be a way for SMEs to confront competition (Sharmilee & Hoque, 2016). Small businesses increasingly face competition not only from their peers but also from large corporations participating in niche markets once regarded as a preserve for small businesses (Ntakobajira, 2013).

3. Research Gap and Objectives of the Study

In the context of Bangladesh, a huge body of literature can be found in the field of small and medium scale businesses regarding problems and prospects but specifically the factors influencing performance of small scale business had not sufficiently been studied. In 2015, Alauddin and Chowdhury attempt to analyze various issues, prospects and challenges of financing SME sector of Bangladesh and find out the ways to overcome these challenges. Ahmed, (1999) studied about the problems and prospects of small and medium business of Bangladesh. He found that access to finance as well as lack of investment or operating funds are the most important problems for the SMEs in Bangladesh. Philip (2011) carried out the research on factors affecting the business success of Small and Medium Enterprises (SMEs) in Bangladesh and examined six factors that influence the SMEs business success. These factors are: characteristics of SMEs, management and know -how, products and services, the way of doing business, resources and finance, and the external environment. In a research conducted by Islam et al. (2011) measure the effect of entrepreneur and firm characteristics on the success of SMEs in Bangladesh. Since there is a huge scope, this study has tried to determine the factors influencing performance of small scale business in Bangladesh especially in Mirpur area.

Thus, it has specified its objectives as follows

1. To identify the factors (Entrepreneurial Skills, Competition, Financial Resources, Country Business Laws) influencing the performance of small scale business.

2. To determine the impact of Entrepreneurial Skills, Competition, Financial Resources, Country Business Laws on the performance of small scale business.

4. Research Methodology

4.1 Nature of the Research

The most appropriate type of research design for this study is causal research design.

4.2 Sources and Collection of Data

For this study purpose, both primary and secondary data have been collected.

This study relied on a field survey on the small business entrepreneurs' of Mirpur area, Dhaka city. Each respondent has received a copy of questionnaire personally (face to face), hence to ensure the highest possible response rate (Zikmud, 2003). Secondary Data was collected from journals, articles, books and internet.

4.3 Population of the Study

The population was small business enterprises in Mirpur area, Dhaka, Bangladesh.

4.4 Sample Selection Technique

The sample of the study was selected using the random sampling technique. The respondents of this study were mainly small business entrepreneurs and staff of Mirpur area, Dhaka, Bangladesh. This study has been surveyed with a total of 200 questionnaires. Among them 196 questionnaires were received. After receiving the feedbacks, because of fragmentary responses and centrality bias, 4 questionnaires were declined and 192 copiously completed questionnaires were finally retained which consequently had engendered around 96% response rate for this study.

4.5 Operational Definition of the Variables

4.5.1 Dependent Variables

Performance of small scale business was the one and only dependent variable of this study.

4.5.2 Independent Variables

This study was contained with four independent variables namely: Entrepreneurial Skills, Competition, Financial Resources, and Country Business Laws.

4.6 Questionnaire Design/ Formation

A structured questionnaire has been developed based on the previous literature to collect information. The questionnaire consists of total 13 questions which are fixed-alternative questions. It has been divided into two sections: Section A and B. Every section has the instructions to guide the respondents. The five point Likert scale ranging from 1 to 5 (1= strongly disagree and 5= strongly agree) has been used in this study. Pretesting of the questionnaire was conducted to assure the reliability the research instrument.

4.7 Data Analysis Techniques

The data have been collected from the questionnaires given to 200 respondents. Then the data have been coded and analyzed by using the computerized Statistical Software Package for Social Sciences (SPSS) software version 20.0. To test the reliability of the collected data, the value of the Cronbach's alpha had been estimated and evaluated against the recommended standard by DeVellis (2003) who suggested that, ideally the Cronbach alpha coefficient of a scale should be above (0.7).In descriptive statistics, mean and standard deviation were used. Pearson correlation test was employed to investigate the relationship between the variables (dependent and independent variables). Linear Regression Analysis was used to measure the total variation between variable.

5. Analysis and Findings

5.1 Sample Demographics

After receiving the feedback, 6 fragmentary questionnaires were declined and 192 feedbacks were sent for further processing which engendered 96% response rate for this study. The profile of the respondent is presented in the Table 1.

Table 1: Profile of Respondents

Description	Category	Frequency	Percentage (%)
Entrepreneurial Profile			
Gender of the respondents	Male	170	88.5
	Female	22	11.5
Age group distribution of the respondents	Below 20 years	4	2.1

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Description	Category	Frequency	Percentage (%)
	21-30 years	69	35.9
	31-40 years	65	33.9
	41-50 years	38	19.8
	51-above	16	8.3
Highest Educational qualification of the respondents	Primary	40	20.8
	Secondary	77	40.1
	Diploma	19	9.9
	Undergraduate	35	18.2
	Graduate	15	7.8
	Others	6	3.1
Year of Business	less than 1year	31	16.1
	1-3 years	59	30.7
	4-7years	102	53.1
Number of Employees	less than 5	162	84.4
	5-10	19	9.9
	11-15	9	4.7
	over 15	2	1.0
Types of business	Sole proprietorship	168	87.5
	Partnership	22	11.5
	Others	2	1.0
Professional business training	Yes	34	17.7
	No	158	82.3
Sources of capital	Bank Loan	33	17.2
	personal savings	141	73.4
	Friends	4	2.1
	Others	14	7.3

5.2 Reliability Analysis

Table 02 below shows the reliability statistics of the scales used in this study. It can be seen from Table 02 below that the report values of Cronbach's Alpha for this study were good where demographic factors alpha value reported was .718 and factors influencing Small Business Performance was .844 which is much higher than DeVelli's (2003) recommended of 0.70. Here Cronbach's Alpha value indicates an acceptable level of internal consistency of the collected data.

Table 2: Reliability Statistics

Particulars	Cronbach's Alpha	N of Items
Demographic factors	.718	14
Factors influencing Small Business Performance	.844	12

5.3 Descriptive Statistics of the Respondents

The table highlights the perception of respondents about the factors which influence the Small Business performance. The findings of this part are presented in Table 03.

Table 3: Descriptive Statistics of the Respondents

Statements	N	Minimum	Maximum	Mean	Std. Deviation
I had some experience in business	192	1	5	4.07	1.080
I am an expert in business	192	1	5	3.77	1.045
One must be educated	192	1	5	3.75	.997
He/she must have some knowledge on how to conduct SB	192	2	5	4.51	.579
Existence of already existing business has an influence in starting SB	192	1	5	4.06	.760
New entrants have an influence in starting SB	192	2	5	4.03	.874
Selling of better quality of products and services by the competitors	192	2	5	4.33	.807
Cost of financing influences Small scale business	192	2	5	3.93	.783

Source of financing has an influence on Small scale business	192	2	5	4.15	.840
Access to financing on Small scale business	192	2	5	4.06	.807
Country regulations have an influence in starting SB	192	1	5	3.92	1.013
Country taxes have an influence in starting SB	192	1	5	3.61	1.120
All the factors are influential to overall business performance	192	1	5	4.09	.750
Valid N (list wise)	192				

The Table 03 shows the perception of respondents about the factors which influence the Small Business performance. It is depicted from the table that the highest mean score is 4.51 which represents that entrepreneurial must have some knowledge of how to conduct SB and the Standard Deviation .579. On the other hand, the lowest mean score is 3.61 which is related to Country taxes that have an influence in starting Small Business and the Standard Deviation is 1.120 respectively.

5.4 Relationship of Small Business Performance with the Entrepreneurial Skills, Competition, Financial Resources and Country Law

Table 4 below shows the consequent coefficients of correlation analysis between the independent and dependent variables of this study. Thus, it can be observed from resulting correlation coefficients shown in Table 4 that a higher level business performance had a significantly strong and positive relationship with Entrepreneurial skills (with r = 0.769 and α = <0.05), and business Competition skill (with r = 0.909 and α = <0.05). This means, a higher level of business performance positively influences the Entrepreneurial skills and business Competition skill and hence, this finding provided a strong support in favor of predefined objectives. Besides, it also was found in this study, as shown in Table 04 that higher level business performance had significantly a positive association with Financial Resources (with r = 0.635 and α = <0.05), and Country law (with r = 0.782 and α = <0.05). That means, those factors positively influence the overall small business performance.

Table 4: Correlation Coefficients Depicted

	Small Business performance	Entrepreneurial Skills	Competition	Financial Resources	Country law
Small Business performance	1				
Entrepreneurial skills	.769**	1			
Competition	.909**	.560**	1		
Financial Resources	.635**	.492**	.647**	1	
Country law	.782**	.602**	.769**	.433**	1

**Correlation is significant at the 0.01 level (1tailed).

5.5 Assessment of Normality and Outliers

Normality was assessed by 'Normal Probability Plot of Regression Standardized Residuals' which is illustrated by Figure 01 below. Here it can be observed that points were positioned in a reasonably straight diagonal line from bottom left to right, with no major deviation from normality.

Figure 1: Normal P-P plot of Regression Standardized Residual

Tabachnick and Fidell (1996) defined outliers as cases that have a standard residual of more than 3.3 or less than -3.3. Figure 02 shows that all the observed cases are within the range, except a few.

Scatterplot

Dependent Variable: Small Business performance
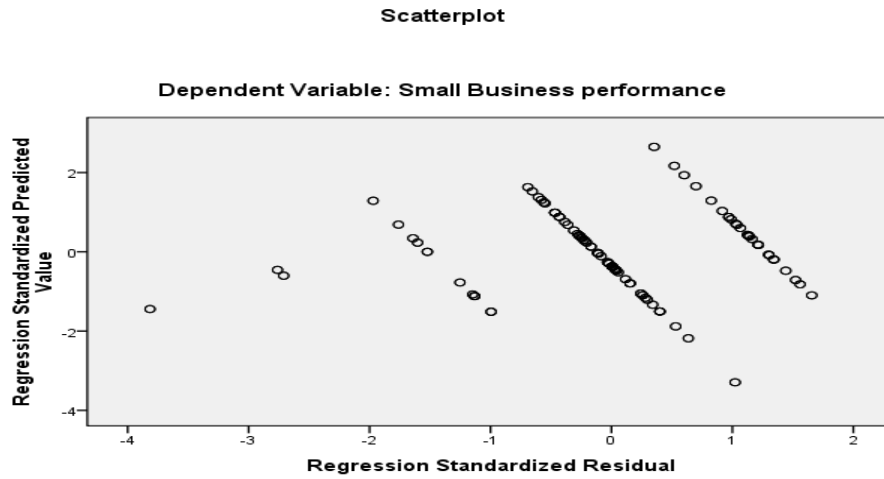
5.6 Coefficients Test

Regression coefficient (B) reflects the relative impact of independent variables on the dependent variable. The beta (β) value indicates the effect of independent variables on the dependent variable to the effect on dependent variable of other independent variables at each stage. Standard Error of the Beta (SEB) coefficient is the standard error of the estimate of beta (β).

Table 5: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.630	.633		2.575	.011
	Entrepreneurial skills	.328	.082	.334	4.062	.000
	Competition	.489	.076	.420	5.580	.000
	Financial Resources	.225	.058	.205	3.757	.000
	Country law	. .404	.083	.339	4.882	.000

a. Dependent Variable: Small Business Performance

In case of SEB, a small standard error implies a more reliable prediction. In the above table it is seen that the p value of independent variables are Entrepreneurial skills, Competition, Financial Resources and Country law (p<.05), that means they have a strong influence on the dependent variable (Table-05).

5.7 Assessment of Study Objectives

Table-06 represents the outcome of variance analysis (ANOVA) as a part of Linear Regression analysis.

Table 6: Analysis of Variance (ANOVA$^{b)}$

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.837	4	2.959	5.785	.000^a
	Residual	95.658	187	.512		
	Total	107.495	191			

a. Predictors: (Constant), Entrepreneurial skills, Competition, Financial Resources, Country law
b. b. Dependent Variable: Small Business performance

Table 06, indicates that The F Value was derived from dividing the Mean Square (2.959) by the Mean Square Residual (.512), which was equal to 5.785. On the other hand, the P value associated with the F value under the column headed 'Sig.', was less than 0.001. Thus P and F value depicted in Table 07, indicates the independents variables (Entrepreneurial skills, Competition, Financial Resources, Country law) of this study reliably predicted the dependent variable (Small Business performance) along with strong evidence against the study objectives.

5.8 Evaluation of the Model

Table 7: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.835^a	.697	.687	.315	.660	1325.785	4	187	.000

a. Predictors: (Constant), Entrepreneurial skills, Competition, Financial Resources, Country law, b. Dependent Variable: Small Business performance

From the above table (Table-08) it is found that the value of R is .835, it indicates that the relations between the dependent variable and the independent variables are strong enough to represent the model. It is also seen that the value of Adjusted R2 is .687, i.e. the dependent variable is 68.7% explained by the independent variable that are included in the model. It means that the effect of Entrepreneurial skills, Competition, Financial Resources, Country law statistically controlled the small business performance in the context of Mirpur areas significantly (see the table where R Square Change = .660, F Change = 1325.785, p< .001).

6. Conclusion and Limitations

Small businesses act as an engine of growth for developing economies like Bangladesh. The small business contributes to generate employment that leads to poverty alleviation as well. This study examined the factors (Entrepreneurial Skills, Competition, Financial Resources and Country Business Laws) which influence the performance of small scale business in Mirpur area of Dhaka city, Bangladesh. With the correlation analysis, we can see that business performance of small businesses had a significantly strong and positive relationship with all the factors (Entrepreneurial Skills, Competition, Financial Resources and Country Business Laws) which also support the regression analysis result that means all the factors work as influential factors for explaining the performance of a small scale business. So we can say that the results have supported our objectives. From a theoretical point of view, the results presented in this study, contributed to the existing literature. The article makes a contribution to the small scale businesses literature by providing insights into the factors that seem to have an impact on the performance of a small business. From the managerial point of view, this study can help an entrepreneur to improve the overall business performance. Despite the merits of this study, it has certain limitations that should be recognized. First, the study is based on Mirpur area, Dhaka city only. Other metropolitan cities are much different in many aspects. There is a wide variation in Small Business operation of rural and urban areas. Secondly, we examined only 192 randomly selected small businesses enterprise. To get more accurate results, one can go through with the total process with a large size of samples. These limitations should provide the future research direction. Therefore, an interesting opportunity for future research could be in a detailed study of small business performance in both rural and urban areas in Bangladesh and more research could be conducted in other areas to compare the findings.

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QUESTIONNAIRE

This questionnaire is designed to collect data on the factors influencing small scale business in Bangladesh. Kindly complete the following questionnaire using the instructions provided for each set of question.

Instruction: Please tick as appropriate

PART A: Respondent's Background Information

1. What is your gender?

[ ] Male [ ] Female

2. In which of the following age brackets does your age fall?

[ ] Below 20 years [ ] 21-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51 and above

3. What is your education level (state the highest level)?

[ ] Primary [ ] Secondary [ ] Diploma [ ] Undergraduate [ ] Graduate [ ] Other _____

4. Status in business? [ ] Owner [ ] Manager [ ] Employee

5. How many years have you been in business?

[ ] Less than 1 year [ ] 1-3 years [ ] 4-7 years

6. How many employees does the business have?

[ ] Less than 5 [ ] 5-10 [ ] 11-15 [ ] Over 15 employees

[ ] Sole proprietorship [ ] Partnership [ ] Other _____

7. Type of business?

[ ] Sole proprietorship [ ] Partnership [ ] Other _____

8. a) Do you have any professional business training?

[ ] Yes [ ] No

b) If Yes in 8(a) which areas have you trained on?

[ ] Accounts [ ] Marketing [ ] Management [ ] Sales Management [ ] Technical [ ] Finance

[ ] Other _____

9. Do you think the level of education and skills/knowledge/training in business of the owners and staff contributes towards the establishment of

small businesses? [ ] Yes [ ] No

Please   explain   how

_____

_____

10. What was your source of capital for business?

[ ] Bank loan [ ] Personal savings [ ] Friends [ ] Other _____

11. Is your business registered?

[ ] [ ] Yes [ ] No

12. a) Did you incur any difficulties when registering your business?

[ ] Yes [ ] No

b) If, Yes kindly indicate the difficulties experienced
_____

_____

13. What inspired you to start- up the business?

[ ] To make money [ ] To have independence [ ] Retrenched/lost job

[ ] Identified gap in offering [ ] Inspired/challenged by family/friends

[ ] To keep me busy/occupied

14. Do you think the reason for starting up a business influences the start-up of small business enterprises? [ ] Yes [ ] No

PART B: FACTORS INFLUENCING SMALL SCALE BUSINESS

15. To what extent do you agree to the following in regard to factors influencing small scale business? Kindly indicate your response, whereby 1-Strongly Agree (SA), 2-Somewhat Agree (A), 3-Neutral (N), 4-Somewhat Disagree (D), 5-Strongly Disagree (SD)

	Strongly Agree 5	Agree 4	Don't know 3	Disagree 2	Strongly disagree 1
Entrepreneurial Skills					
I started my business because I had some experience in business					
I started my business because I am an expert in Business					

For one to start a small business, one must be Educated					
For one to start a small business he/she must have some knowledge on how to conduct business					
Competition					
Existence of already existing businesses has an influence in starting small business					
New entrants have an influence in starting small Business					
Selling of better quality products and services by competitors					
Financial resources					
Cost of financing influences small scale Business					
Source of financing has an influence on starting small business					
Access to financing influences small scale business					
Country business laws					
Country regulations have an influence in starting small business					
Country taxes have an influence in starting small business					

16. Please give suggestions/recommendations towards factors influencing small scale business in Bangladesh.

_____

_____

_____

_____

THANK YOU FOR YOUR TIME AND COOPERATION

Perceived Characteristics of Innovation (PCI): A Case Study on Human Resource Information System (HRIS) in Private Banks of Bangladesh

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Farhana Islam

Abstract

Adoption and usage of a technology can be explained by using different models and diffusion model of innovation (Rogers, 1983) is one of the significant models in this perspective. In this model it is explained that the extent of innovation is dependent on five unique characteristics. These are relative advantage, compatibility, trialability, complexity and visibility. The technology which has more relative advantage, compatibility and visibility will be treated as more innovative and on the other hand it should be less complex and common which is known as trialability. The study surveyed 150 human resource executives from 10 private banks in different locations of Dhaka to determine the key influential factors that significantly influence the usage of human resource information system (HRIS) adopted by those banks. These HR executives were surveyed through non-probability convenience sampling method. After the collection of primary data, hypotheses were formulated and two sample Z-test were used to test the hypotheses with 0.05 level of statistical significance. The result of hypothesis reveals that in case of relative advantage, compatibility and visibility, **Ha** is true because at 5% level of significance the Z value is z= -1.96 or z=1.96, where calculated value of the above three factors were 8.18, 3.20 and 5.65 respectively. That means **Ho** is rejected and **Ha** is accepted. Alternatively these three factors are positively related to the innovativeness of HRIS. Again in case of complexity and trialability, **Ho** is true because at 5% level of significance the Z value is z= -1.96 or z=1.96, where calculated value of the above two factors were 0.083 and 0.054 respectively. That means **Ho** is accepted and **Ha** is rejected, which means these two factors are negatively related to the use of HRIS. For assuming the characteristics of data, descriptive analysis and interpretations were drawn on the basis of frequency, percentage, calculated mean, and standard deviation (SD). In addition, empirical analyses were depicted by coefficient of variation (CV). The recommendations were provided based on the research findings and analysis.

Keywords: *HRIS, Innovation, relative advantage, compatibility, trialability, complexity and visibility.*

1. Introduction

Human resource Information System (HRIS) has been subject to many studies examining different aspects of it's different functions. Management of human resource in an organization cannot work smoothly if the HRIS is not adopted properly. HRIS is usually carried out through a database or more often in a series of inter-related databases. Management of today's business world has become so sophisticated due to various challenges and consequently organizations are now seen to adopt different systems to cope with such challenges (Moore and Benbasat, 1991). HR systems help senior management to identify the manpower requirements in order to meet the organization's long term business plans and strategic goals. Middle management uses human resource information system to monitor and analyze the recruitment, allocation and compensation of employees. Operational management uses HR information system to track the recruitment and placement of the employees. The Human Resource Information System (HRIS) which has the characteristics of a better relative advantage, compatibility and visibility and less complexity and trialability is treated as more innovative. The dependent variable in this study is the impact of innovative HRIS to manage employees in different private banks of Bangladesh. The independent variables are: relative advantage, compatibility, trialability, complexity and visibility. Now a day's innovative Human Resource Information System (HRIS) is needed to smooth management of human resources.

2. Literature Review

HRIS has been addressed as a tool that organizations use to solve and manage a variety of issues and processes connected to managing people. (Tesi, 2010). Organization performance concept focus on the organization's ability to attain its goals by using resources in an efficient and effective manner (Daft, 2000). Development in information technology has changed the HR functions within organizations. Nowadays, several organizations have come under the services of an HRIS to support HR department in performing main HR functions, promote administrative efficiency, enhancing decision making, speeding up information sharing (Lengnick-Hall & Moritz, 2003). An innovative HRIS is comprised of five different factors. These are relative advantage,

compatibility, trialability, complexity and visibility. The concept relative advantage means the degree to which an innovation is perceived as being better than the idea it replace (Rogers, 2003). The degree of relative advantage is often expressed as economic profitability, social prestige etc. Relative advantage is viewed as an advantage for the organization over previous ways of performing the same task (Agarwal and Prasad, 1997). Compatibility is the degree to which an innovation is perceived as consistent with the existing values and needs of potential adopters (Rogers, 2003). (Tornatzky and Klein, 1982) find that an innovation is more likely to be adopted when it is compatible with individuals' job responsibility and value system. Trialability is the degree to which an innovation may be experimented with on a limited basis (Rogers, 2003). Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 2003). Systems that are perceived to be easier to use and less complex have a higher likelihood of being accepted and used by potential users (Agarwal and Prasad, 1997). New ideas that are easy to understand will be adopted more rapidly than innovations that require the adopters to develop the new knowledge, skills, and understanding (Premkumar et al., 1994). Visibility is the degree to which the results of an innovation are visible to others (Rogers, 2003). Therefore, it will be important to establish visibility in a new application of the technology before attempting to challenge the dominant technology in its application (Weiss and Dale, 1998). Three of the five factors (relative advantage, compatibility and visibility) are significant predictors of adoption in the expected direction, although their collective contribution to the explained variance was somewhat modest. (Dupagne & Driscoll, 2005).

3. Statement of the Problem

In the light of the above discussion, the researchers have outlined the research problem as: the impact of innovative Human Resource Information system in case of management of human resources in different private banks of Bangladesh.

4. Research Objectives

The purpose of the study was to explain the impact of five core factors i.e. relative advantage, compatibility, trialability, complexity and visibility, which influence the use of human resource information system (HRIS) in private banks of Bangladesh. The following objectives have come up to achieve the purpose of the study:

The main objectives of this study are:

A. To identify the influence of the factors that facilitate the innovation of HRIS application in private banks of Bangladesh.

B. To find out the relationship between innovation of HRIS and core factors (relative advantage, compatibility, trialability, complexity and visibility) in private banks of Bangladesh.

5. Research Hypotheses

Research hypothesis is an unproven statement, which helps the researcher to draw the Suggestion on his hypothetical assumption whether it is true or false based on some specific statistical tests. (Akterujjaman, 2010). Based on the objectives of the study, the following hypotheses in Table 1 (at 95% confidence level) are developed, which are to be tested:

Table 1: Developing Hypotheses for Different Factors

Sl.	Factors	Null Hypothesis (Ho)	Alternative Hypothesis (Ha)
1.	**Relative Advantage**	**Ho**: $\mu1-\mu2=0$	**Ha**: $\mu1-\mu2 \neq 0$
2.	**Compatibility**	**Ho**: $\mu1-\mu2=0$	**Ha**: $\mu1-\mu2 \neq 0$
3.	**Trialibility**	**Ho**: $\mu1-\mu2=0$	**Ha**: $\mu1-\mu2 \neq 0$
4.	**Complexity**	**Ho**: $\mu1-\mu2=0$	**Ha**: $\mu1-\mu2 \neq 0$
5.	**Visibility**	**Ho**: $\mu1-\mu2=0$	**Ha**: $\mu1-\mu2 \neq 0$

The hypotheses of the research were:

H1: There is no significant influence of relative advantage on the innovation of HRIS in the private banks of Bangladesh.

H2: There is no significant influence of compatibility on the innovation of HRIS in the private banks of Bangladesh.

H3: There is no significant influence of trialability on the innovation of HRIS in the private banks of Bangladesh.

H4: There is no significant influence of complexity on the innovation of HRIS in the private banks of Bangladesh.

H5: There is no significant influence of visibility on the innovation of HRIS in the private banks of Bangladesh.

6. Research Methodology

Research methodology is the most important part of any study. This section contains the study about population, study area, data collection, sample size, sample frame and sample unit. The study has been done on the basis of the following methodology:

i) This study is a conclusive type of research. Primary data has been used for the purpose of the study.

ii) A self-constructed questionnaire was administrated to collect primary data considering the objectives of the study. The respondents were personally questioned and the questionnaires were filled in by the interviewers based on the responses of the respondents.

iii) The survey was conducted on 10 (Ten) leading private banks of Bangladesh. Namely (Dutch Bangla Bank Ltd., Prime Bank Ltd., BRAC Bank Ltd., First Security Islami Bank Ltd., Social Islami Bank Ltd., Bank Asia Ltd., Mercantile Bank Ltd., Eastern Bank Ltd., Standard Bank Ltd., and Mutual Trust Bank Ltd.,) of Bangladesh located at Dhaka city. The area of population covers only the HR executives of those banks. The total population (N) was 310 HR executives.

iv) 150 human resource executives of different private banks were selected as sample (n).

v) For sampling, non-probability convenience sampling technique was used.

vi) A structured questionnaire with 5-point Likert Scale was used in the survey where in 1 indicates strongly disagree and 5 indicates strongly agree. The close ended questionnaire was used which contained the variables that constitute the factors influencing the innovativeness of HRIS.

vii) In this research, the influence of the stated factors on the innovativeness of HRIS is measured by hypothesis testing. Simple statistical techniques like frequency distribution, percentage frequency, mean value, standard deviation, and coefficient of variation were used to analyze the collected data.

7. Analysis and Discussions of the Study

After conducting hypothesis testing, the value of the hypothesis was found as the following:

H1: According to the results of hypothesis testing, a negative relationship was found between relative advantage and the innovation of HRIS in the private banks of Bangladesh. Since it is a two tailed test at 5% level of significance, the table value are z= -1.96 and z= 1.96. As the calculated value was found 8.18, we reject null hypothesis *(Ho)* and alternative hypothesis *(Ha)* is accepted.

H2: According to the results of hypothesis testing, a negative relationship was found between compatibility and the innovation of HRIS in the private banks of Bangladesh. As it is a two tailed test at 5% level of significance, the table value are z= -1.96 and z= 1.96. As the calculated value was found 3.20, we reject null hypothesis *(Ho)* and alternative hypothesis *(Ha)* is accepted.

H3: According to the results of hypothesis testing, a positive relationship was found between trialability and the innovation of HRIS in the private banks of Bangladesh. As it is a two tailed test at 5% level of significance, the table value are z= -1.96 and z= 1.96. As the calculated value was found 0.083, we thus accept null hypothesis *(Ho)* and alternative hypothesis *(Ha)* is rejected.

H4: According to the results of hypothesis testing a positive relationship was found between complexity and the innovation of HRIS in the Bangladeshi private banks. As it is a two tailed test at 5% level of significance, the table value are z= -1.96 and z= 1.96. As the calculated value was found 0.054, we accept null hypothesis *(Ho)* and alternative hypothesis *(Ha)* is rejected.

H5: According to the results of hypothesis testing, a negative relationship was found between visibility and the innovation of HRIS in the private banks of Bangladesh. As it is a two tailed test at 5% level of significance, the table value are z= -1.96 and z= 1.96. As the calculated value was found 5.65, we thus reject null hypothesis *(Ho)* and alternative hypothesis *(Ha)* is accepted.

The results indicated that in case of hypothesis **H1, H2** and **H5,** alternative hypothesis (*Ha)* may be accepted and in case of hypothesis **H3 and H4,** null hypothesis (*Ho)* may be accepted.

In order to analyze more and to assume the characteristics of data, descriptive analysis and interpretations are drawn below on the basis of frequency, percentage, calculated mean, standard deviation (SD). In addition, empirical analyses were depicted by coefficient of variation

(CV). Firstly the researchers tried to identify the influence of relative advantage to the extensive adoption of HRIS in the private banks of Bangladesh.

1. Relative Advantage

Table 1: Satisfaction level regarding relative advantage

Scale Value	Satisfaction Level	Frequency	Percentage	Mean	SD	CV
1	Strongly Disagree	3	2			
2	Disagree	3	2	3.946	0.809	20.501
3	Neutral	26	17.3			
4	Agree	85	56.7			
5	Strongly Agree	33	22			
	Total	150	100			

Source: Field Survey

Table 1, reveals that, out of 150 HR executives 56.7 percent agreed, 22 percent HR executives strongly agreed and 17.3 percent are neutral regarding the necessity of relative advantage in HRIS software**.** Here the mean value is 3.946, which lie in up neutral category of HR executives' responses. The standard deviation (SD) and co-efficient of variation (CV) are respectively 0.809 and 20.501, which indicate the HR executives of private banks of Bangladesh believe that relative advantage has great impact on innovative HRIS.

2. Compatibility

Table 2: Satisfaction level regarding compatibility

Scale Value	Satisfaction Level	Frequency	Percentage	Mean	SD	CV
1	Strongly Disagree	13	8.7			
2	Disagree	31	20.7	3.26	1.228	37.669
3	Neutral	38	25.3			
4	Agree	40	26.7			
5	Strongly Agree	28	18.7			
	Total	150	100			

Source: Field Survey

Table 2 reveals that, out of 150 HR executives 26.7 percent agreed, 18.7 percent HR executives strongly agreed and 25.3 percent are neutral regarding the necessity of compatibility in HRIS software**.** Here the mean value is 3.26, which lie in up neutral category of HR executives' responses. The standard deviation (SD) and co-efficient of variation (CV) are respectively 1.228 and 37.669, which indicate the HR executives of private banks of Bangladesh believe that compatibility has significant impact on innovative HRIS.

C. Visibility

Table 3: Satisfaction level regarding visibility

Scale Value	Satisfaction Level	Frequency	Percentage	Mean	SD	CV
1	Strongly Disagree	2	1.3	3.26	0.847	25.981
2	Disagree	21	14			
3	Neutral	75	50			
4	Agree	40	26.7			
5	Strongly Agree	12	8			
Total		150	100			

Source: Field Survey

Table 3, disclose that, out of 150 HR executives 26.7 percent are agreed, 8 percent HR executives strongly agreed and 50 percent are neutral regarding the necessity of compatibility in HRIS software**.** Here the mean value is 3.26, which lie in up neutral category of HR executives' responses. The standard deviation (SD) and co-efficient of variation (CV) are respectively 0.847 and 25.981, which indicate visibility has noteworthy impact on innovative HRIS mentioned by the HR executives of private banks of Bangladesh.

4. Complexity

Table 4: Satisfaction level regarding complexity

Scale Value	Satisfaction Level	Frequency	Percentage	Mean	SD	CV
1	Strongly Disagree	23	15.3			
2	Disagree	53	35.3	2.513	0.981	39.037
3	Neutral	52	34.7			
4	Agree	18	12			
5	Strongly Agree	4	2.7			
	Total	150	100			

Source: Field Survey

Table 4, it is observed that the highest 35.3 percent HR executives disagreed and 34.7 percent workers were neutral and 15.3 percent workers strongly disagreed regarding the complexity of HRIS. The SD and CV are respectively 0.981 and 39.037 which denotes that the opinion of the respondents disagreed. So, the researchers can conclude that HRIS software should be free from complexity.

5.Trialibility

Table 5: Satisfaction level regarding trialibility

Scale Value	Satisfaction Level	Frequency	Percentage	Mean	SD	CV
1	Strongly Disagree	60	40			
2	Disagree	34	22.7	2.153	1.174	54.529
3	Neutral	35	23.3			
4	Agree	15	10			
5	Strongly Agree	6	4			
	Total	150	100			

Source: Field Survey

The above Table 5, shows 40 percent HR executives strongly agreed and 23.3 percent HR executives were neutral and 22.7 percent disagreed about the trialibility of HRIS software . Here mean value is 2.153, which is

below the neutral position of agreed level. The SD and CV are respectively 1.174 and 54.525, which denotes that the opinion of HR executives regarding the triability of HRIS is negative which means the HRIS software will have to be less common and more unique in its features.

By conducting the above hypothesis test and descriptive analysis, it can be said that this study provides an enhanced knowledge and understanding about the core factors that influence the HRIS innovativeness in private banks of Bangladesh and the relationship between the core factors and level of innovativeness of HRIS. After analyzing the data it is clear that three factors (relative advantage, compatibility and visibility) are highly responsible to the positive outcome of innovative HRIS and two factors (trialability and complexity) are negatively influencing the innovativeness of HRIS. The findings of this research would be highly useful in improving HRIS uses in private banks of Bangladesh.

8. Limitations of the Study

Every research work may have, in a wide sense, some limitations and the present study is no exception in this regard. There remains ample scope of variations in the interpretation of data by different persons if they are not aware of the background of data collection. So, data itself have limitations and could not always serve the exact purpose of the study. However, the researchers are hopeful to overcome those limitations with extensive efforts and effective decision. In fact, sampling is a recognized technique of conducting any research in the contemporary world, specially, in business studies. The study was only on 10 private banks of Dhaka city, though there are more than 60 private (local & foreign) banks in Bangladesh. The result of the study which is drowning by the sampling method is not cent percent rigorous and it can represent average output of a concerned fact. However, it is expected that a little variation would not affect much of the overall findings of the study.

9. Recommendations

The authors have suggested some recommendations for improving the performance of the HRIS and to increase the level of satisfaction of the HR executives. These are as follows:

(i) The authority of the private banks should give more emphasis on those factors which affect positively to develop innovative HRIS for the smooth management of human resources in the organization.

(ii) They should avoid the unhelpful factors which may hinder the HRIS innovativeness.

(iii) This study may be helpful for the decision makers of private banks of Bangladesh in planning and implementation of the HRIS in future, where extensive attention needs to be given.

(iv) At the time of adopting HRIS in the organizations, the bank authority should not only consider the stated five factors mentioned in this study but also should consider other two factors which are perceived risk and perceived resources available in HRIS software to get the maximum benefit from it.

(v)   It is a study based on HRIS use of private banks of Bangladesh, but side by side concentration should be given also on the use of HRIS in public banks. And in this regard government may make it mandatory to adopt HRIS for the smooth management of employees in public banks as it contains more employees than private banks.

10. Conclusion

As the world is changing with new innovations and technologies, the need for Human Resource Information System (HRIS) has become essential to meet Human Resource (HR) challenges in the information based economy and society. This study is important both for future research on technology acceptance and the practice of technology deployment in private banks of Bangladesh. This study is indicating that three factors i.e. relative advantage, compatibility and visibility will have to be included in every human resource information system in order to make it more effective.

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The Image of the University: Its Impact on Students' Satisfaction and Loyalty

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Abstract

The increasing number of private universities in Bangladesh is creating a high competition in higher education sector. This work focuses on the relationship of the university image with students' satisfaction and loyalty. A conceptual framework is proposed that investigates the impact of the university image on students' satisfaction and loyalty. The survey has been completed on the perceptions of students (present and past) of five private higher educational institutions (HEIs). There were 190 respondents and the researcher has found that there is a positive and significant relationship between the university image and students' satisfaction but the relationship between the university image and students' loyalty is insignificant. That depicts that student becomes satisfied with their institutional image but may not be loyal towards the institution. Therefore, private HEIs as service organizations have to focus on the institution's image for fulfilling students' satisfaction.

Keywords: University Image, Students' Satisfaction, Students' Loyalty, HEIs.

1. Introduction

As a rapid expansion of educational system in Bangladesh, Private University Act 1992 was enacted. It is reported on the website of the University Grant Commission of Bangladesh Government that there are 144 universities in Bangladesh at present of which 41 are public and 103 are private. Organization's brand can be viewed as the synonym for organizational image. This image has a huge impact on the perceptions of outsiders about the organization. Higher educational institutions (HEIs) are competing immensely for attracting the best applicants nationally and internationally. Therefore, universities are today acting more like commercial businesses and assessing their corporate brands and images has become urgent (Curtis et al., 2009; Mazzarol et al., 2000; Bunzel, 2007; Williams & Omar, 2014; Melewar & Akel, 2005). Nowadays, universities are competing for getting not only more applicants but also

the best applicants (Hemsley-Brown & Oplatka, 2006; Melewar & Akel, 2005). As the competition increased universities are branding themselves uniquely and create a unique image to differentiate themselves from their competitors (Sung & Yang, 2008). As the most valuable assets of a university, the image has an impact on decision making of students and also it ensures the future growth and development of the university. The corporate image has received much attention in academic research but only a limited attention has been given to image in service-oriented organizations like universities (Sung & Yang, 2008. Aghaz et al., 2015; Kazoleas et al., 2001). There is a lack of university image research in Bangladesh. There is also a lack of research on the existing and ex-students. Majority of the research focused on the perception of current university students on university's brand or image but a few researches have been conducted on the previous students (e.g. Sung & Yang, 2008; Palacio et al., 2002; Aghaz et al., 2015; Alwi & Kitchen, 2014; Nguyen & LeBlanc, 2001; Duarte et al., 2010). Every university has many stakeholders but without recruiting the new students it will not survive any more (Ali-Choudhury et al., 2009). Sometimes consumers have no idea about the product but image can play a strong salient role on consumers' perceptions and behavior. University image can have a strong influence in choosing the institutions for higher education.

A new trend in service sector is shifting the strategies toward the brand imaging. The educational sector is not out of it. At present the HEIs also try to build their image and attract and retain the students. The purpose of this effort is to enhance the reputation of the institution and to have a positive influence on university ranking. There is a huge competition among the universities to attract and retain the best and brightest students. Millions of dollar are spent by universities trying to burnish their image and enhance their position in these rankings. In this study, it is tried to find out to what extent the university image affect the students' satisfaction and loyalty. In this regard, the importance of brand image will be extended to the university context which is a new area of interest as a subject for this study. Naming an appropriate brand is very much important for any institution. It may be considered as the most important asset for a service organization especially for HEIs. A good name creates a positive image towards customers or clients. Development and management of differentiated brand will work as a safeguard for achieving the competitive advantage in educational sector (Alves and Raposo, 2009). Kotler and Fox (1985) said in their research that image of a university and its fame is much more important than the quality of services because this image is

effective in selection of students (Landrum et al., 1998; James et al., 1999). Students' satisfaction and loyalty are severely affected by the image of a university. For this reason, every university tries to invest a lot of money to uphold their image to the students and other stakeholders. That is why management takes the strategy to identify and improve the image of the institution.

It was believed in 1980s and 1990s that high quality services can produce huge benefits in terms of profit, cost savings, and market share (Parasuraman et al. 1991). Universities that are now facing increased competition turned to the strategy of satisfying the best quality services and trying to obtain the competitive advantage in this challenging environment (Poole et al. 2000). There would appear a relatively very little formal research undertaken which focuses on the drivers of customer satisfaction amongst students, and whether the provision of high-quality services is likely to produce a tangible benefit in terms of students' satisfaction and loyalty to the university/ institution (Mazzarol and Soutar 1999). In the service industry it is acknowledged that higher education is a major service sector and students are customers and clients (Australian Senate 2001; Meek and Wood 1998; Moodie 2001), and a study of the factors which drive customer satisfaction and student loyalty would seem to have value. Day by day students' loyalty is becoming very important for the HEIs and the reasons are as follows: i) it is realized that students are not the only constituencies that may be categorized as customers of HEIs, ii) employers, families and the society may also be looked upon as customers (Marzo-Navarro*et al.*, 2005a). Other stakeholders rather than the students could also be included in studies regarding their loyalty to educational institutions. But in this study, students are focused as customers. The concept of loyalty may be perceived and defined in a number of different ways. Loyalty may be defined as positively related to the ability of an institution to both attract new students and retain existing students (Dick and Basu, 1994; Oliver, 1997; Henning-Thurau*et al.*, 2001). Attracting students and retaining them can help the administration of HEIs in making better decisions concerning the allocation of scarce resources (Johnson & Gustafson, 2000). So, building up students' satisfaction and loyalty is the most important objective especially to private institutions (Helgesen & Nesset, 2007; Henning –Thurau & et al., 2001). It is also found that achieving students' loyalty is a prime objective of many HEIs for several reasons (Henning – Thurau & et al.,2001) such as: 1) Tuition fees are the main source of income for most privately owned universities. So, for financial solvency retaining students is critically

important for the future university activities. 2) Service marketing theory on customer participation (Rodie & Kleine, 2000) indicates that loyal students positively influence the quality of teaching through active participation and committed behavior. 3) After graduation, a loyal student may continue to support his or her academic institution (a) financially; (b) through word-of-mouth; and (c) through some form of cooperation.

2. Theoretical Background and Literature Review

The image of a university has got a meaningful impact on students' satisfaction and loyalty. This study, it is trying to identify that quality of services, feelings of the students, and have a direct and meaningful impact on students' satisfaction and loyalty.

2.1 University Image

The impact of the image of companies has been studied by many researchers. According to Kotler and Fox (1985), an image is a general feeling or perception that a person belongs to a subject and it can be gained from the difference in different individuals of an institute. Corporate image is "what stakeholders perceive the organization to be" (Markwick & Fill, 1997). According to Barich & Kotler (1991), it is the combination of one's beliefs, attitudes, and impressions about a company. But it is also true that images are not always based on facts and reality, they can influence consumers' behavior and decisions (Barich & Kotler, 1991; Dowling, 1986) and sometimes the best company may fail if it is not able to convey its eminence to its target audience (Nandan, 2005). Another study revealed that corporate image is a picture of mind of a corporation that corporation's consumers have developed (Tran et al., 2015). It is also agreed that corporate image should be understood as perceived by organization's external stakeholders (Dowling, 1986; Treadwell & Harrison, 1994). Barich & Kotler, (1991); Stern et al., (2001) said corporate image means the understanding that exists in consumer's mind. A study by Wilkins and Huisman (2013) says that image is the reputation of an institution that stakeholders perceive over time. They also state that reputation can be an antecedent as well as a consequence of an image as people can be influenced by reputation when they make their image perceptions.

Several studies have remarked that image has two dimensions as one is cognitive and other one is affective and both of these dimensions are needed for evaluating the image of an institution (Aaker, 1996; Agarwal &

Malhotra, 2005; Malhotra, 2005). The cognitive dimension of image means the functional and tangible attributes and beliefs. In turn, the affective dimension means the emotions and psychological characteristics and it is more intangible and abstract attributes of image. Both dimensions are necessary to study because both of them are found to contribute to the overall image and have an impact on consumer behavior and brand choice (Da Silva & Alwi, 2006; Agarwal & Malhotra, 2005; Alwi & Kitchen 2014).

There has been a lot of research on corporate image in marketing field but very few researches on the image in service-oriented organizations like universities have been conducted (Sung & Yang, 2008). As the university is a service oriented field, images can have a great importance on students' satisfaction and loyalty. Services can be described intangible and experience-based products, the quality and value can be measured after the consumption of it. And the image of the university can play a significant role in predicting the outcome of the service production and can be the most important cue for consumers to evaluate the ability of the service (Nguyen & LeBlanc, 2001). Now, most of the universities also understand that they need to increase the attempt to build up a good image that is the main factor for attracting the students (Sung & Yang, 2008).

It is also stated in the literature that brand image is the perception of quality associated with the brand name. From the view point of the level of company, image means the perception of an organization reflected in the associations held in consumer memory (Keller, 1993).

2.2 Students' Satisfaction

Satisfaction refers to the customers' attitudes towards a product or service. It can also be explained as emotional feelings to the differences between what customers want and what they receive. It is the fulfillment of some needs, goals or desires. To satisfy the students is essential for retaining the students because they are the profit making instruments. It is common to view that dissatisfied students cut back the number of courses or drop out the institution completely. Hence, students' satisfaction or dissatisfaction leads to intention to stay or quit and that leads to students' retention or attrition (Kara & De Shields, 2004). Very few researches have been conducted on stimulus of satisfaction of customers among students (Mazzarol and Soutar, 1999). In the era of globalization HEIs are treated as a very important service commodity and students are its customers (Australian Senate, 2001; Meek and Wood, 1998; Moodie, 2001). It seems

that factors which motivate satisfaction of customers are worthy of being studied. According to Olsen and Johnson (2003), satisfaction can be viewed from two perspectives either as a transaction-specific satisfaction or as a cumulative satisfaction/post-consumption satisfaction (Oliver, 1997). After 1990s many researchers used to think that satisfaction is the combination of customers' cumulative, after purchase, and overall judgment about purchasing behavior. According to Oliver (1997), satisfaction is the mixture of both affection (emotion) and cognition approach in the consumer's fulfillment response. It is a judgment of a product's or service's features, or the product or service itself, provide a pleasurable level of consumption-related fulfillment, including levels of under or over fulfillment (Oliver, 1997).

2.3 Students' Loyalty

Students' loyalty in relation to HEIs means behavioral loyalty as the students' willingness to be attached with the university after the completion of their existing undergraduate programs and their intention to continue the graduate programs at the same university again in future. Besides, the attitudinal loyalty is defined as the students' willingness to provide positive word of mouth and recommendations in favor of their university to their families, friends, employers and organizations whenever there arises opportunities. Students' loyalty is greatly influenced by the increased mobility of students. Nowadays, students may leave one institution and continue their studies without any difficulties. In Bangladesh, students (especially private university students) have got the right to switch their educational institutions. If the first institution approves of the students to switch then the second institution also approves of the courses that have been completed in their earlier institution. After the completion of their degrees they can still continue to maintain a relationship with their educational institutions in different formats like by participating in conferences and other arrangements or by acting as the institute's advocates. Sometimes a large number of previous students are also returning to HEIs to continue education courses (Marzo-Navarro *et al.*, 2005b). Again teaching quality, students' active participation in institutional activities, and committed behavior are positively related to students' loyalty (Rodie and Kleine, 2000). Consequently, HEIs may give concentration on achieving students' loyalty and also search the variables affecting students' loyalty (Marzo-Navarro *et al.*, 2005b; Schertzer and Schertzer, 2004). Customer loyalty can be looked upon as a concept containing a tripartite attitudinal component

(cognitive, affective and conative) and a closely related behavioral component (repeat patronage – customer retention) (eg Johnson and Gustafsson, 2000; Lam *et al.*, 2004).

According to Athiyaman, (1997); Helgesen & Nesset, (2007); Mohamad, (2009); Thomas, (2011), Students' loyalty refers to the loyalty of a student after his or her time at educational institutions. Students' loyalty influences the educational institutions both for a long and short period of time. The loyal students influence the teaching quality positively through active participation and committed behavior (Rodie & Kleine, 2000). The loyalty of the students increases the stability of an academic institute. If the loyalty is improved, the likely results will include an increase in motivation of students. Students' satisfaction is an important antecedent and is a major driver of students' loyalty (Thomas, 2011).

2.4 The Relationship among University Image, Students' Satisfaction and Students' Loyalty

Many researchers have introduced and studied different types of models and variables (antecedents or drivers) to explain relations among students' satisfaction, images and loyalty (Johnson *et al* ., 2001 ; Seth *et al* ., 2004 ; Williams *et al* ., 2005). The image of a higher educational institution is the construct that most influences student satisfaction. Again the image is also a very powerful ingredient of student loyalty. If higher education institutions would like to compete through image, the first step to take is to measure the university image held by its students (Alves & Raposo, 2010). According to Keller and Staelin (1987), the quality and quantity of information from university affects selection of students. Students and their families are concerned about the image of the educational institutions and give the weight to each of them. The Image will create a positive feeling in the mind of consumers. In the same direction, well-known and reliable HEIs have more chance to attract top university students and lecturers (Curtis et al., 2009). Selnes (1993) suggested that image may be combined into a model of loyalty together with satisfaction. He also found that both variables, image and satisfaction are associated with loyalty.

3. Research Gap in Bangladesh

In the context of Bangladesh a large body of literature can be found in the field of job satisfaction and productivity but it is very hard to find any specific research on the relationship of the university image, students' satisfaction and loyalty. That is why this study tries to find out the impact

of the university image on students' satisfaction and loyalty. This research will try to find answer of the following questions:

A. Is there any relationship among the image of HEIs, satisfaction, and loyalty?
B. Does the image of institution positively affect the students' satisfaction and loyalty?

4. Research Objectives

This research has been designed to analyze the possible impact of university image on students' satisfaction and loyalty. Thus, this research has specified its objectives as follows:

I) To measure the level of university image, students' satisfaction, and loyalty among the students of some selected private universities in Bangladesh.
II) To assess whether the level of students' satisfaction has any significant correlation with the university image.
III) To assess whether the level of students' loyalty has any significant correlation with the university image.
IV) To determine the individual impact of the university image on students' satisfaction and loyalty.

5. Methodology of the Study

5.1 Research Design

This research intends to analyze the relationship among university image, students' satisfaction and loyalty. The type of the research design is a descriptive type of research.

5.2 Data Extraction

To complete the research a comprehensive questionnaire survey was conducted in five private universities in Bangladesh named 1) Bangladesh University of Business and Technology 2) North South University 3) University of Liberal Arts Bangladesh 4) Stamford University and 5) Daffodil International University. These universities are located in Dhaka City. The target population of this study was the current and past students of these universities. A non-probability convenience sampling technique was used to collect the data. The sample size was 190 who had been surveyed with a structured questionnaire from May to July 2018. The questionnaire was divided into two parts. The first part of the

questionnaire contained instructions for collecting the respondents' feedback on their demographic characteristics. The second part of the questionnaire contained necessary directions so that information of three aspects of the respondents may be collected like a) 17 questions for university image b) 15 questions for students' satisfaction and c) 5 questions for students' loyalty. The second part of the questionnaire was scaled with the 'Five Point Likert Scalling Technique' as follows:

Table 1: Coding Used in the Scale

Code	Label
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

5.3 Data Collection and Interpretation

In this study parametric statistical analysis techniques have been used to assess and measure the different issues of this study. More specifically, 'Cronbach's Alpha' value has been determined to measure the reliability and validity of the collected data. Additionally, the 'Bivariate' correlation analysis is done by using 'Pearson Product-moment Correlation' technique to explore the impacts of university image on students' satisfaction and loyalty. For checking the linearity assumption, regression analysis is done.

5.4 Operational Definitions of Variables

5.4.1   Independent Variables

There are three variables in this study. Among these variables one is independent variable named the university image and another two are dependent variables.

5.4.2   Dependent Variables

This study contains two dependent variables such as i) Students' Satisfaction and ii) Students' Loyalty.

6.   Analysis and Findings

6.1 Response Rate and Sample Demographics

The questionnaires were distributed to a total number of 250 respondents. But the number of feedback was 230. Out of these 230 questionnaires

there were some erroneous responses and excluding those the total number of accepted questionnaires was 190. So, the total number of respondents rate is 76% of which 57.4% is male and 42.6% is female. The age limit of the respondents is between 20 to 40 years who are either present (127) or ex-students (63) of the universities and among those 48 students are employed and142 are unemployed. The demographic information may be summed up in the following table:

Table 2: Demographic Statistics

Particulars		Frequency	Percent	Valid Percent	Cumulative Percent
Age	20-25 years	124	60.8	65.3	65.3
	25-30 years	45	22.1	23.7	88.9
	30-35 years	9	4.4	4.7	93.7
	35-40 years	9	4.4	4.7	98.4
	40+ years	3	1.5	1.6	100.0
	Total	190	93.1	100.0	
Gender	Male	109	53.4	57.4	57.4
	Female	81	39.7	42.6	100.0
	Total	190	93.1	100.0	
Employment Status	Employed	48	23.5	25.3	25.3
	Unemployed	142	69.6	74.7	100.0
	Total	190	93.1	100.0	
Types of Student	Current	127	62.3	66.8	66.8
	Ex-Student	63	30.9	33.2	100.0
	Total	190	93.1	100.0	
Name of the Institutions	Bangladesh University of Business and Technology	110	53.9	57.9	57.9
	North South University	22	10.8	11.6	69.5
	University of Liberal Arts Bangladesh	21	10.3	11.1	80.5
	Stamford University Bangladesh	20	9.8	10.5	91.1

Particulars		Frequency	Percent	Valid Percent	Cumulative Percent
	Daffodil International University	17	8.3	8.9	100.0
	Total	190	93.1	100.0	

6.2 Reliability of the Study

Reliability test is used to measure the consistency and stability of variables (Sekaran, 2009). The researcher also determines the Cronbach Alpha value in this study. The Cronbachalpha value closer to 1 represents better instruments in general. According to Sekaran (2009), values less than 0.6 are considered to be poor and above 0.7 are good. Table-3 given below shows the reliability statistics of the factors used in this study. From this table it can be seen that the retrieved Cronbach Alpha scores of the three factors used in this study is considered acceptable because it is near to 0.7

Table 3: Reliability Statistics

Cronbach's Alpha	No. of Items
.648	3

6.3 Level of the University Image, Students' Satisfaction and Students' Loyalty

The result shows that the level of the university image is moderate (67.4%) (Table 4) and it means students of the different private universities have moderate satisfaction and loyalty towards their university's image. Table 5 shows that students' satisfaction in their university image is also moderate (71.6%); it indicates that students are moderately satisfied on the image of their universities.

Table 4: Level of University Image

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	36	18.9	18.9	18.9
Moderate	128	67.4	67.4	86.3
High	26	13.7	13.7	100.0
Total	190	100.0	100.0	

Table 5: Level of Students' Satisfaction

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	11	5.8	5.8	5.8
Moderate	136	71.6	71.6	77.4
High	43	22.6	22.6	100.0
Total	190	100.0	100.0	

Table 6: Level of Students' Loyalty

	Frequency	Percent	Valid Percent	Cumulative Percent
High	190	100.0	100.0	100.0

It is also seen from the above table (Table 6) that the loyalty level of the students is very high (100%). After passing their graduation they tend to remain or recommend the institutions to others.

6.4 Correlation Analysis

Pearson's correlation is used to determine the relationship between the variables. Davis (1997) and Sekaran (2003) proposed the rule where they stated that correlation values from 0.7 and above indicates very strong relationship, values from 0.5 to 0.69 indicates strong relationship, values form 0.3 to 0.49 indicates moderate relationship, 0.1 to 0.29 indicates low relationship and values below that indicates very low relationship. The following table shows the correlation among the variables.

Table 7: Correlations

		University Image	Students' Satisfaction	Students' Loyalty
University Image	Pearson Correlation	1	$.790^{**}$	.089
	Sig. (2-tailed)		.000	.220
	N	190	190	190
Students' Satisfaction	Pearson Correlation	$.790^{**}$	1	.065
	Sig. (2-tailed)	.000		.374

		University Image	Students' Satisfaction	Students' Loyalty
	N	190	190	190
Students' Loyalty	Pearson Correlation	.089	.065	1
	Sig. (2-tailed)	.220	.374	
	N	190	190	190

**. Correlation is significant at the 0.01 level (2-tailed).

The relationship of the Independent Variable University Image and dependent variable Students' Satisfaction is 0.790 or 79%. And according to Davis (1997) the relationship between these variable is very strong and very significant. The relationship between the independent variable University image and dependent variable Students' loyalty is 0.089 or 8.9% which indicates a very weak relationship between the variables.

6.5 Regression Analysis

From Table 8 it is found the value of R is .079 which indicates the relationship between the dependent variable and the independent variables are strong enough to represent the model. It is also seen that the value of adjusted R square is.624, i.e. the dependent variable is 62.4% explained by the independent variable that are included in the model.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.790ᵃ	.624	.622	6.71118	.624	311.625	1	188	.000

a. Predictors: (Constant), Students' Satisfaction

b. Dependent Variable: University Image

7. Conclusion

At the end of the discussion it can be said that there is a high positive correlation between the university image and students' satisfaction. But the relationship between the university image and the students' loyalty is not strongly correlated. The result shows the image of the institution has a significant impact on students' satisfaction but not on loyalty. As the retaining of customers is very important for the future of many companies,

retaining of students at HEIs is also significant for the future survival in this competitive era. From managerial perspective, understanding the relationships among the variables is very important. The main purpose of this study is to propose a relationship among the above mentioned variables. However, the influence of university image to students' satisfaction is greater than the students' loyalty. This indicates that in order to distinguish the institution from that of competitors, all services must be viewed by management as opportunities to provide a superior service that creates a good image to the customer or students. This study also uncovers that institution image has a tremendous impact on students' satisfaction. The study suggests that private universities should not overlook to build a favorable institution image since it has an impact on students' perceptions of the HEIs. Therefore, it is recommended to the universities to spend time, resources and effort to build up strong image of the institutions through offering interesting courses, offering better facilities, providing job opportunities of the graduates to its own university or other institutions, credit transfer facility to other overseas institutions, advertising and other effective promotional campaigns to create a strong and favorable image among their students and other stakeholders. Thus, the favorable institutional image of HEIs may help in the competitive market since it might differentiate its status from its competitors.

8. Future Research Direction

Above all the study has some limitations. The sample was drawn only from some selected private universities within Dhaka City. If the sample was collected from private universities from all over the country the result may indicate more accurate. Further research may be conducted on public universities also. A comparison may also be done between the two categories of universities.

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Appendix-I

Questionnaire

Dear Respondent,

This is to inform you that I, Md. Johirul Islam, Assistant Professor, Department of Management, Bangladesh University of Business and Technology (BUBT), am going to survey a questionnaire related to **the university image: a driver of students' satisfaction and loyalty.** You as a current/past student of your university are requested to give your sincere comment against each of the statement by putting a tick mark. Your sincere evaluation will be helpful for the correct assessment of the topic of this study. It is declared that all information given by you will be kept confidential and used only for academic purpose.

Part-A: Respondent's Demographic Information: Please put the tick mark.

Name of your university/institution:

Types of student: i) Current ii) Past

Gender: i) Male ii) Female

Employment status: i) Employed ii) Unemployed

Age (years): i) 20-25 ii) 25-30 iii) 30-35 iv) 35-40 v) 40+

Part-B: On a scale of 1-5 (1 being Strongly Disagree and 5 being Strongly Agree), please rate your opinion on the following statements:

University Image

The following statements are related to the image of the university. These statements indicate the degree of agreement or disagreement of a respondent to the university image. Please indicate the extent to which you agree or disagree by giving the tick mark.

SN	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The reputation of the quality is well known.					
2	Worldwide recognition.					
3	Credit transfer facility to various international universities is easy.					
4	Strategic alliance with well-known overseas institutions is excellent.					

SN	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	University has a good link with different renowned industries in Bangladesh.					
6	University recognizes the prior students' quality.					
7	The help of alumni association towards the graduates is good.					
8	Easy internship facility for every student.					
9	Good affiliation with national and international professional bodies.					
10	Campus outlook is very much attractive.					
11	Renowned for good marketing strategy.					
12	Prospect of getting better jobs after the completion of study.					
13	University itself provides employment opportunities for its graduates.					
14	Recognized by the government.					
15	Huge campus size.					
16	Safe campus.					
17	Courses are relevant to the work market.					

Students' Satisfaction

The following statements are related to the students' satisfaction about their universities. These statements indicate the degree of agreement or disagreement of a respondent to his/her satisfaction on university. Please indicate the extent to which you agree or disagree by giving the tick mark.

S.N	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	University offers very low tuition fee.					
2	The location of the university is very convenient.					
3	It offers very much interesting courses.					
4	Distance from my living place is narrow.					
5	Teaching quality of the faculty is very good.					
6	The atmosphere of the university is attractive.					
7	Behavior of the faculty is very good.					
8	It provides better facilities like internet facility, library facility, common room					

S.N	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	facility, canteen facility etc.					
9	Available scholarship facility.					
10	Students enjoy open credit facility.					
11	Multi courses are available.					
12	Entry requirement is flexible.					
13	Lots of extracurricular facilities.					
14	Application procedure is easy.					
15	Available transportation facility.					

Students' Loyalty

The following statements are related to the loyalty of a student. These statements indicate the degree of agreement or disagreement of a respondent related to his loyalty to the university. Please indicate the extent to which you agree or disagree by giving the tick mark.

SN	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Willingness to recommend the university to other acquaintances.					
2	Prefer to maintain the contact to the faculty after completion of study.					
3	For further study I will choose the same university.					
4	After my study I want to join the alumni.					
5	I would like to help financially if possible.					

Thank you for your kind cooperation.

Corporate Sustainability Imperative: Creating a Climate and Transforming Culture for Total Quality Management

Zahed Mannan
Shahina Akter

Abstract

The paper examines the necessity of corporate cultural transformation for implementing Total Quality Management (TQM) in organizations, and then explores the basic elements of organizational culture in order to setting the stage for formulating the possible ways of transforming organizational culture to make it appropriate for TQM. Based on secondary data, the paper argues that change of corporate culture is inevitable for a fast-changing organization that aspires to gain competitive advantage in the turbulent business environment through continuous quality improvement. It suggests that (a) there is no best way to transform organizational culture and (b) changed culture needs to be sustained for continued success. It also attempts to identify lessons from cultural transformation efforts in the TQM organizations. Implications for management and organizations are presented, along with the directions for future research.

Keywords: Total quality management, organizational culture, TQM culture.

1. Introduction[1]

The introduction of total quality management (TQM) requires fundamental, multidimensional changes in virtually all aspects of an organization, including its culture, structures, leadership styles and patterns, learning environment, reward and recognition systems, and supplier relationships. Of these, cultural change is of paramount importance, if an organization wishes to implement TQM with success. It is generally agreed that for implementation and continuation of TQM

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[1] A key feature in most studies in the field of quality is the work of the quality gurus and the review presents a theoretical analysis of their views and compares them to accepted management theories. Old references are used as needed.

program, an organization must have a learning culture where risk taking, experimentation with new ideas, open communication, rewarding of 'constructive failure', and nurturing of an environment of trust and fairness will be encouraged. Organizational leaders need to take initiatives to alter traditional, rigid cultural variables to make them supportive of learning, and thereby facilitating effective implementation of TQM.

2. Literature Review

A review of literature indicates that all of the successful TQM organizations have transformed their corporate cultures from the traditional practices into the TQM supportive cultures. Literature also suggests that organizations which transform their cultures before stepping into the implementation of TQM program place a high value on openness, creative ideas and innovation, experimentation, risk-taking behavior, employee empowerment through team-building, double-loop learning, and rewarding team performance. In the absence of a favorable culture, organization's overall quality of performance suffers as it does not have the capacity or the will to be responsive, adaptive and innovative.

Despite the fact that national culture is almost absolutely difficult to change over a short period of time, organizational culture can be changed more easily, although it is not an easy task. Cultural change is an important part of organizational change which is an extremely complex phenomenon necessitating the consideration of a "variety of external forces at work", a complicated set of internal administrative-structural, decision-making, economic and technological sub-systems linked together through the actions and interactions of human beings (Guest, Hersey & Blanchard 1977:173). Change very often becomes unavoidable. There is ample documentation that overlooking organizational culture has impeded efforts to change organizational functioning (Beer, 1980; Mirvis & Berg 1977). Examination of past failures in organizational development efforts point to the role of culture as a critical force to be considered in effecting change (Frost et al., 1985:86) if leaders neglect anchoring changes firmly in the organizational culture, they will do it at their peril.

TQM necessitates changes in the traditional organization in its structures, work processes, policies, rules and regulations, employee mindset, corporate culture, and virtually all aspects of the organization. TQM can hardly be implemented in an organization unless changes are made in the core values, attitudes, and beliefs of managers and employees. The major

reason of changes is to delight the customers in terms of providing products and services that meet and even exceed their expectations. All of the successful TQM organizations have transformed their corporate cultures from the existing (former) practices into the TQM-supportive cultures. Xerox Corporation, for example, shifted to TQM culture as is manifested in its 'Leadership through Quality' programs. IBM made cultural changes explicit in its focus on respect for individuals, service to customer and excellence in everything the company does. The cultural change of the British Airways is reflected in its 'Putting People First' teams, and its 'A Day in the Life' program organized to deal with the internal customers. Similar cultural change began in the Paul River Insurance Group of USA with its 'Quality Has Value' program (they call it process). Scandinavian Airlines (SAS) underwent, as reported by Bank (1996), radical cultural change by redefining its mission, and created a huge internal realignment to face up to the external adaptation of a new approach to customer service. These and many other organizations in the Western world, especially in the USA, opted for radical cultural transformation to successfully implement TQM programs.

3. Objectives and Research Methods

The general objective of this paper is to examine the issue of cultural change in an organization aspiring for TQM implementation. The specific objectives include:

(i) exploring the dynamics of the corporate culture;

(ii) assessing the linkage between the corporate culture and TQM;

(iii) identifying the elements of the corporate culture in TQM organizations;

(iv) deriving lessons from the corporate cultural transformation efforts undertaken by selected organizations; and

(v) suggesting possible ways for transforming the corporate culture into TQM culture.

This paper is the result of an extensive desk research. The research methods involve (i) collection of relevant literature from various sources such as libraries and internet, (ii) review of the collected literature and thorough content analysis, and (iii) assimilation and synthesizing of the information to make a coherent whole.

4. Findings and Analysis

The review of the literature related to corporate cultural transformation in organizations reveals that the corporate managers need to have a clear understanding of the dynamics of corporate culture; top leaders of organizations have to consider reshaping the corporate culture if it appears to be not congenial to the TQM; organizations in order for implementing TQM must have certain value-laden elements supportive of TQM assumptions; and care needs to be taken for sustaining the transformed culture that would eventually help maintain TQM culture. The following sections present a discussion of these issues:

Dynamics of Corporate Culture

It is but indispensable for the corporate leaders to fully understand the dynamics of organizational culture in order to meet today's leadership-challenge for acquiring the ability to develop culture-adaptability. Understanding the dynamics of culture is very likely to help leaders (and others too) gain a deeper insights about the inherent causes of difficulties to change organizational culture. The ability to understand and to manage changes in culture also represents a key variable for organizational change (Collins, 2000). The concept of organizational culture is explained in this section to help organizational leaders not only grasp its meaning but also show its relationship to dynamic leadership for quality improvement.

As Brown (1995) describes, organizational culture is the pattern of beliefs, values and learned ways of coping with experience that are manifested in employee behavior. Brown's description of culture resembles that of Byars (1987) who suggests that organizational culture is the pattern of beliefs and expectations shared by the organization's members which powerfully shape the behavior of individuals and groups within the organization. According to Schwartz & Davis (1981:36), "An organization's culture can be described by its management in terms of the way their tasks are typically handled in the context of key relationships." Organizational culture is, thus, the shared experiences, beliefs, and norms that characterize an organization. From management's point of view, organizational culture emphasizes on shrewdness and commonality often expressed through symbols, rituals, myths and ceremonies (Kotter & Heskett, 1992; Schein, 1985). Culture is derived from certain basic beliefs and values shared by people in the organization. Sashkin & Kiser (1992) interpreted organizational culture as the cumulative perception of how the organization treats people and how people expect to treat one another.

According to them, it is based on consistent and persistent management action, as seen by employees, vendors, and customers. Schein (1985:6) prefers to reserve the term culture for "the deeper level of *basic assumptions* and *beliefs* that are shared by members of an organization, that operate unconsciously, and that defined in a basic 'taken-for-granted' fashion an organization's view of it and its environment." He further argues that organizational culture takes the pattern of basic assumptions shared by the group[2], acquired by solving problems of adaptation and integration, working well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 1992). Organizational shows up, as Goetsch & Davis (2006) noted how employees behave in the job, their expectations of the organization and each other, and what is considered normal in terms of how employees approach their jobs. Gatiss (1996), a British quality consultant and academic, emphasizes on the necessity to distinguish between formal and informal aspects of organizational culture. Formal values are reflected in the organizational vision and mission, work procedures and other formal control systems. Informal values, on the other hand, develop over time and are shaped by several factors (Gatiss, 1996).

Miles (1997) suggested that any cultural change that is a supporting part of a corporate transformation attempt must focus on creating and sustaining three types of values and behaviors:

(i)   *Basic ground rules*: how people relate to one another fairly, ethically, and constructively in the workplace.

(ii) *Strategically aligned values and behavior*: these uniquely align with the vision and primary initiatives of a particular period of transformation in the life of a company.

(iii) *Core values and behavior*: these promote adaptiveness to cope with the changing competitive conditions.

Schwartz & Davis (1981) remarked that a corporation's culture is reflected in the attitudes and values, the management style, and the problem-solving behavior of its people. It gives employees a sense of how to behave, what they should do and where to place priorities in getting the job done (Pearce & Robinson, 2005).

It may be worthwhile to note that within organizational culture organizational subcultures are born as a subset of organization's members

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[2] Schein regards an organization as a group.

who interact regularly with one another, identify themselves as a distinct group within the organization, share a set of problems commonly defined to be the problems of all, and routinely take action on the basis of collective understandings unique to the group (Frost et al., 1985). Business or other organizations can be viewed as mini-cultures. They operate within the wider national cultural context, as well as cultures in their own right (Bjerke, 1999). Organizational culture may therefore be understood as the intersection of subcultural interpretative systems. The more will be subcultural variations, the more difficult will be the change in organizational culture.

From the above definitions and discussions, it is clear that a culture exists in an organization when there are values and norms which are: (1) related to specific behaviors, such as, how to treat workers or who gets consulted on what decisions; (2) accepted by the management of the organizational members or a subgroup representing a subculture; and in which (3) individuals are aware of and are supported by the majority of organization members (Katz & Kahn, 1978). Organizational culture, as part of the internal environment, is primarily concerned with employees, values, beliefs and other elements of that environment. Since individuals and groups (organizations) seek stability and meaning, the cultural change is difficult and often 'highly anxiety provoking'. Therefore, those who are to initiate change in organizational culture need to seriously consider this point. Cultural components (values and beliefs) in the organization need to be critically examined as well as be tested to determine what kind of changes are necessary – what to be reaffirmed, what to be reshaped or modified, what to be altogether changed, in order to align them with the TQM programs. Simply reshaping or changing will have little effects unless mechanisms are developed to ensure that they are practiced, and that people have the abilities and skills to make and cope with the changes. Careful attention needs to be given to the 'sustenance aspect' of the changed culture. The business organizations that have distinctive cultures have a competitive advantage over their competitors. Furthermore, integrating various subcultures/minicultures may pose problems – in fact, it will. So, the change-leader needs to be sensitive to the minicultures, develop skills to work across cultural boundaries, be empathetic to the minicultural groups, and be able to work well with those subgroup members. The above discussions have provided a clear picture of organizational culture, and the necessity of transforming traditional culture into a TQM culture. But the linkage of organizational culture with TQM is not covered. The following section is devoted to this issue.

4.2 Link between Organizational Culture and TQM

Traditional organizational culture where management styles are bureaucratic is not conductive to TQM implementation. Therefore, reshaping/modification of culture is inevitable to create TQM-friendly environment. TQM requires all-employee involvement in decision-making and solving problems, team-building for group cohesiveness, employee empowerment to drive out fear and to allow employees to work to their full potential with little control from above, maximum customer satisfaction through continuous improvement of product and service quality and so on. All these cannot be achieved without a supporting culture. And a quality supportive culture can be ensured through reshaping it.

Table 1: Presents the major 'issues' to be changed for creating a TQM culture. It also shows how the changed issues would look like (right column).

Traditional/Existing Cultural Issues (before change)	TQM Culture (after change)
• Top-down goal-setting and imposition of goals on employees for execution. • Centralized or at best partly decentralized decision-making and problem-solving. • More focus on short-term goals and profitability. • Productivity and profit orientation. • Emphasis on 'inspection' for correction of error in work process. • Orientation to accepting certain margin of error (organization encourages defects by setting acceptable quality levels). • Individualized learning, not generally shared collectively.	• Participative goal-setting with involvement of managers and employees. • Fully decentralized decision making and group derived solutions. • Clear focus on long-term goals to be achieved through short-term goals. • Customer orientation (satisfied customers would bring in high profit). • Emphasis on doing things right first time: zero defects. • Prevention of errors rather than fixing them after the fact (continuous improvement in error-free output to meet customer requirements). • Synergistic partnership among all categories of employees

	(managers, engineers, workers), facilitating shared decision-making and change.
	• Striving for managing conflict – creative conflicts are encouraged.
	• Organizational learning through sharing of individual learning.

Table-1: Selected issues of traditional organizational culture that must be transformed into TQM culture

A TQM culture is thus characterized by top management commitment, all-out participation of managers and employees in making data-based decisions, involvement of every department, function and process, customer satisfaction through understanding customers' needs and expectations, emphasis on zero defects, process measurements, continuous improvement, recognition of individual responsibility and authority, continuous appraisal and training for development, synergistic partnership, instigation of creative conflicts, and organizational learning and effective utilization of emotional intelligence in the organization.

4.3 Elements of Culture in a TQM Organization

A TQM organization must have certain value-laden culture, which is supportive of TQM assumptions. The necessary elements (based on Sashkin & Kiser, 1992) that a TQM culture needs to have are explained here. The change-leader(s) or team should understand and act on these elements of successful TQM implementation.

4.4 Information for Improvement

Performance and quality information must be used by relevant people for performance improvement, not to judge individual employee's performance. The essence of this TQM-culture-element is that fear of punishment for results needs to be driven out, else employees would not feel encouraged to provide correct data. Management should emphasize on process metrics, not on result metrics. This reminds us of Deming's caveat: 'Drive out fear,' because fear is the great enemy of quality improvement. Those persons who use information to understand problems, develop solutions, and take action, must develop measurement systems designed to support TQM through focusing on improvement of processes, not on control of those responsible for work processes. If not, continuous improvement efforts are bound to fail.

5. Equality of Authority and Responsibility

Authority must be equal to responsibility. Leaders need to ensure that the employees responsible for a work/job have been empowered to make decisions, to improve work, to control their own activities, to take actions in standard procedures whenever necessary without every time seeking approval from the top – overall, to deal with their responsibilities. This requires enabling conditions – employees must understand the TQM concepts, learn skills to identify problems, and use information for quality improvement. However, the problems to be figured out and solved have to pertain to the employees' own areas, with no involvement of people from other areas. If others' involvement becomes unavoidable because of the departmental-interface of problem, it can be done through inter-functional team building.

5.1 Result-Oriented Rewards

This element of TQM culture emphasizes on recognition for achievement, both symbolic (certificate, pin, name on a plaque, newsletter story, etc) and material rewards (cash bonus, special privileges). There should be a combination of both the types of rewards, which should operate at the individual, group and organizational levels in order to best reinforce TQM values. Here the leader's challenge is to maintain consistency among the rewards at different levels for avoiding conflicts of one type of reward to another. In a TQM culture competitions among employees are avoided, and cooperation is seen as a basis for working together. Cooperation can be achieved through team-building in the workplace. And this necessitates redesigning jobs in support of TQM and developing cooperation team ethic.

5.2 Security of Jobs

Job security, including guarantee against layoff, provides an employee-friendly environment, and it is likely to lead to the creation of a dedicated and motivated workforce in the organization. By driving out fear of losing jobs for mistakes, job security encourages the employees to find ways and take risks to improve performance that results in customer satisfaction. And customer satisfaction is at the root of TQM. If managers really wish to include among the employees the feeling that their organization does value people, they must develop a sense of job security even under the most adverse business conditions. Managers can learn lessons from the Japanese companies, and even from several American firms such as IBM and Hewlett-Packard who are practicing no-layoff policy.

5.3 Climate of Fairness

TQM culture has a direct relationship with organizational climate of fairness, which is in most part created by activities and behaviors of the managers, especially the top-level leaders. The more fairness prevails in the organization, the more it will help to nurture a TQM culture. When a positive climate of fairness exists the employees develop a trust in the managers, feel that the reward system will properly work, think that there will be justice to them, and believe that their empowered status will not be bogged down. All these are essential ingredients of a TQM culture.

6. Sustaining the TQM Culture

Creation of anything is easier than maintaining it. The situation is the same with the TQM culture. The change-leaders establish a TQM-friendly culture over a long period of time after tackling and setting many odds, spending thousands of hours beyond the normal call of duty and shouldering the risks of even losing jobs and reputation. However, the achievement may flounder if complacency attacks the hearts of the leaders and employees. Complacency is a great enemy to sustaining any achievement, not only for new cultural environment for TQM.

If the change-leaders fail to ensure a sustained TQM culture, all efforts for successful TQM implementation are bound to fail. Even if a new culture has been established, the resisters to change are still there. And, new events may occur which can eventually encourage some people to resist further change or allure them to revert back with the sparkle of 'past was the best'. Feeling of glorious past or the sense of 'present is absolutely fine' kills the incentive to proceed further. The leaders need to be sensitive to this issue which is critically intertwined with cultural sustenance. They must not forget that sustained TQM culture will produce sustained progress for the organization. Double efforts are needed to see that the earlier achievements have been sustained and will continue to sustain.

With a view to making the new culture a permanent part of the organization, the organization's leaders may resort to several ways to accomplish this mission:

- Regularly organize customer survey to solicit customers' feedback. Survey results will provide you relevant and necessary data to improve upon the existing norms and behaviors.

- Match company's vision. Strategy and culture. These three must be supportive, and their development and implementation must be

integrated. Mismatch between strategy and culture poses real obstacles. A strong strategy-supportive culture nurtures and motivates people to do their best and it also promotes company identification among employees (Oden, 1999), thus strategy-culture alignment tremendously helps in creating a foundation for sustained culture.

- Build the work-teams with members from cross-functional expertise in such a manner that there is no mismatch between members because of someone's rude behavior, antagonism, inborn obstination, serious lack of expertise or destructive disagreement. Train them to develop their professional/occupational skills on a continuing basis that would help them keep in touch with the ever-changing processes in the organization.

- Make it a habit for everyone in the organization to work on quality issues everyday for some time. Thus, 'quality' would not go 'out of sight'.

- Make involvement in total quality a required part of people's responsibilities. Making it voluntary implies that it is less important than the things that required (Pieters, 1992).

7. Cultural Transformation Efforts: Lessons of Experience

The lessons that we can derive from the experiences of TQM organizations in their efforts to transform their cultures for making them TQM-friendly are as follows:

First, adequate time-elapse is needed for cultural transformation. New behavior has to take place long enough to become truly ingrained. A culture changes when the basic assumptions and values are altered, and that happens only when certain behavior that reflects those attitudes has taken place long enough that it becomes the accepted way of operating, so that it is taken for granted and is passed down from one generation to another (Ciampa, 1992). Second, learning programs (awareness, training and education) are considered basic to cultural change for TQM. When training programs, and new measurement and reward systems are used to reinforce new attitudes and behavior, then cultural change takes place. Training plays a significant role in all TQM companies through unlocking the door to quality improvement. Open learning programs are needed for managers at all level to help them develop themselves. In IBM, for example, a cultural change began with quality training, starting with top twenty five executives and then cascading down through the lower levels.

Third, behavioral and attitudinal changes will not last long unless the changes bring better results such as reduction of cost with no downsizing, reduction of time in product development, increase of market share due to customer loyalty, rewarding employees for better performance, etc. Such results produce lasting behavioral change leading to eventual change in culture. Fourth, achieving tough targets requires participative and cooperative culture. In one TQM company, transforming a bureaucratic and militaristic culture into a service-oriented and market-driven culture required creation of a new open, supportive and participative management style. In still another company, new management and work processes were established to unleash the creative talents of employees for enabling them to continually pursue quality improvement (Ciampa, 1992). Fifth, unfreezing of employees' behavior and attitudes paves the way for cultural change. Employees must be provided with clear information about what has caused changes necessary – why current approach is inappropriate/ineffective, what has led to customer dissatisfaction, what has made the company unable to maintain the competitive advantage. Sixth, there is no substitute for effective leadership and senior management's top-down commitment to successfully transforming organizational culture. Top leaders must initiate the change in an open environment seeking all employees' spontaneous cooperation and direct involvement – especially involvement of those whose jobs will be affected by change. Seventh, the cultural change might need a change in the people in management if resistance to change becomes unmanageable – a really sensitive issue to be dealt with a strong hand and considerable prudence. Eight, in a TQM organization the culture needs to be changed in such a way that failure in experimentation with new ways of doing the things is not punished. Successful cultural change is intertwined with the management's willingness to support failure.

8. Ways of Transforming Corporate into TQM Culture

Business organization wishing to go by TQM program for customer satisfaction must also go for cultural transformation to achieve the desired results. It may be noted in this connection that management has to take the lead for bringing in change as management's influence on the corporate culture is considerable. Connel (1999:366) suggests that, to bring about the change, the management style should not only be participative but it should also be consistent in order to create the trust and be compatible with management's own values for attaining a close alignment of corporate culture with the reality of the workplace culture. If this is not the

case, she warns that any cultural change achieved will be of a superficial nature only, as leadership will be perceived as ineffective, contradictory or both, resulting in an uncertain direction and a confused culture. Some suggestions are offered here for accelerating the transformation process; many more may be added to the list depending on the nature of the organization concerned, because cultural change should be situation specific.

8.1 Initiate Change from the Top Leadership

Cultural transformation must begin from the top of the organizational hierarchy. The starting point is the CEO, who has to visibly lead the organization in the cultural change and 'set unequivocally demonstrative examples'. And then the transformation initiatives would transcend the senior executives. They have to recognize that change of culture is hard and they won't find much support for doing so inside the organizations.

8.2 Establish a Free-Flow Communication System

An effective multi-way (not simply two-way) communication system needs to be established for encouraging free flow of information. Hierarchical barriers have to be broken down. All employees must be informed of the ensuing changes, and at the same time, they must be allowed to freely communicate with relevant persons in the organization for clarification, guidance or any kind of assistance in putting the change into action. Success in communication tremendously helps in bringing about cultural transformation although it is difficult in organizations with geographically dispersed locations.

8.3 Ensure Involvement of Middle Management

Evidence shows that middle management very often resist changes in the organization more than any other level, either because they feel neglected/overlooked (Jacobson & Hilikirk, 1989), or because they become afraid of doing much more work than before the changes (Evans & Dean, 2003; Juran, 1989). There is an urgent need to involve the middle managers from the very beginning of the transformation process. They should be convinced of the necessity of transforming to TQM culture.

8.4 Intervene in the Hiring Process

To effectively implement the cultural change programs, it may often be deemed necessary to hire new employees who share the new values. It may also be necessary to 'remove employees who strongly resist or blunt

efforts to revamp the old culture, which, in extreme cases, could mean changing top management'.

8.5 Develop Employees to Their Full Potential

Changes in any culture and other aspects of the organization will obviously necessitate new skills for employees to acquire. Therefore, before venturing into TQM programs, and as a corollary to it cultural transformation, adequate measures need to be undertaken for employee development to equip them with necessary skills to successfully go by the wind.

8.6 Pay Careful Attention to Management of Nonchange

There may be values and norms in the organization, which may not be needed to change when cultural change-programs are on. During a time of transition, it may be as important to manage stability (nonchange) as it is to manage change. Times of transition may offer the challenge of managing change and stability simultaneously. In an explorative study of the management of culture carried out in a Silicon Valley microcomputer company, the researchers arrived at conclusions that management of cultural change is as important as management of nonchange in order to reap the benefits of the desired changes. They considered 'managing culture' as synonymous with 'changing culture'[3]. Peters and Waterman, authors of *In Search of Excellence* (1982) provided insights into how organizations with successful cultures sustain those cultures rather than how new cultures can be created.

9. Conclusion

The relationship of organizational culture to TQM implementation is important, and this paper argues that cultural transformation is a basic foundation upon which a TQM program needs to be built, for organizations to successfully develop competitive advantage through continuous quality improvement. The paper discusses the major arguments for transforming organizational culture in order to make it adaptive to TQM and offers explanations to certain fundamental assumptions underlying the implementation of TQM in organizations. It argues that organizational culture can be transformed in many different ways and thus there is no single best way to accomplish this task. It also makes the point that simply transforming the culture is not enough for continued success;

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[3] See, for further information, Siehl (1958:125-140)

sustaining of the transformed culture is essential for ensuring success in the long run. It specifically deals with identifying lessons from cultural transformation experiences that might be helpful to organizations aspiring to implement TQM.

9.1 Implications for Organizations and Management

Several implications for especially the fast-changing organizations emerge from this paper. Firstly, organizational leaders understand the necessity of transforming organizational culture in order to implement TQM in their organizations. It becomes apparent to them that in a fast-changing business environment organizational culture can become dysfunctional, thereby necessitating its change. Secondly, leaders and managers grasp the dynamics of organizational culture. Thirdly, they can establish a plausible link of organizational culture with TQM, and consider reshaping the corporate culture based on specific situations such as rapid growth of the organization itself, fundamental changes in the environment, high competition, globalization effects, etc. Fourthly, they gain a broad idea about the issues of traditional organizational culture that must be transformed into TQM culture. Fifthly, the change leaders/team can develop insights regarding the necessary elements for successful implementation of TQM. Sixthly, they find different ways of transforming the existing organizational culture into TQM culture, that might help in deciding for a blend of the ways to ensure success. Last but not the least, the change-leaders learn how to sustain the changed culture and how to derive lessons from others who have already demonstrated successes in their endeavors to implementing TQM. Overall, the paper prepares the organizational leaders for giving a renewed thought to go for implementing TQM and also provides them with the necessary knowledge for putting their thoughts into concrete shape.

9.2 Directions for Future Research

The ideas articulated in this paper may further be developed at least in two directions: First and foremost, future research on the relevance of the transformation of organizational culture for understanding the dynamics of TQM-implementation in organizations should focus not only on identifying the cultural components that need to be changed, but also on assessing the role of other organizational dimensions such as top leadership and management commitment, restructuring the organizational design, and learning environment. The second direction for further research involves undertaking empirical researches in the organizational

contexts side by side with theoretical analyses. In the absence of adequate empirical evidence, literature centers mostly around theoretical propositions related to cultural transformation for TQM implementation. Empirical researches should therefore develop along with conceptual developments. Culture researches also need to explore how corporate culture can be effectively transformed without antagonizing the mid-and-lower level managers and operating employees who have been found in many organizations to resist the cultural change.

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Empirical Investigation of Altman's Z Score Model for Textile Industry of Bangladesh: Applying One Way ANOVA to Test Uniformity on Performances

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Abstract

There are a lot of models available to measure the level of financial soundness or distress of a firm. Among them, Altman's Z Score model has already been proved as the mostly wide and reliable model for predicting bankruptcy. On the other hand, Textile industry of Bangladesh is very promising and eventful as this industry is contributing boost up the export level of the country to a great extent after meeting the local demand. The main purpose of the study is to assess the financial health of some selected successful firms under this industry by using Z Score model. Eight (8) textile manufacturing firms depending on some chosen parameters have been selected to conduct the study. The required information has been gathered from the annual report collected from Dhaka Stock Exchange (DSE) library and from some other sources. The study revealed that, only three firms among the sample units (Square Textile Ltd, Mithun Knitting and Dyeing Ltd) and Apex Spinning Mills Ltd are financially sound whereas other five chosen firms are not in a situation of financial soundness.

Keywords: Textile Industry, Financial Soundness, Z Score, Bankruptcy Prediction, One Way ANOVA, Homogeneous Subsets, DSE.

1. Introduction

Financial soundness of a business firm is the most important matter for the stakeholders. For making further investment as creditor or shareholder, one must understand whether the firm can pay off the rate of return or not which depends on the financial position of the firm. The creditors will be interested to know the capability of the firm in paying off obligations. On the other hand, the shareholder will be interested to know the capability of the firm in generating profit. Both of their expectations for return can be met if the firm can prove itself financially sound. Financial soundness of

the company is also important for the management and employees as the measurement of financial soundness always shapes the decisions for the future.

There are a lot of models available for measuring the financial soundness of a firm. But the Altman's Z Score has been proved as the most reliable and widely used tool across the countries. This model was developed to predict the possibilities of bankruptcy of both manufacturing and nonmanufacturing companies. Begley et al. (1996) conducted a study which indicates that Z Score had 76.9% accuracy in predicting bankruptcy of the chosen sample. Altman used five predictive factors to test the validity of multivariate model known as Z Score. This model was developed based on financial ratios which was derived from the financial statement. Chen and Shemerda (1981) found 90% accuracy level in predicting bankruptcy by using Z Score model. Thus this model became popular and used in many countries for making the prediction of bankruptcy of firms irrespective of the industry and size.

Textile industry is one of the most flourishing and revenue earning industries in Bangladesh. This industry is continuously providing the most important source of growth toward the developing economy of Bangladesh as this export of textile products is one of the principal sources of foreign exchange earnings. By 2013, this industry created 4 million employments which mainly empowered the women which is considered almost half of the labour force in the country. By this way the women force of the country started being productive and contributed to the country's economy. Nowadays, after China, Bangladesh became the largest apparels exporter of the western brands. In 2013-2014 fiscal years, Textile industry covered 81.1% of the overall export of Bangladesh (World Finance, 2015). So, according to the trend it is strongly expected that this industry will be flourished more and will be contributing in a much better way to the overall development of the economy of Bangladesh.

With such awareness, it is just the right time for the Textile industry of Bangladesh to be analysed. Thus this study is very important as it will provide the right information to the stakeholders regarding financial soundness of the companies under the textile sector.

2. Objective of the Study

Before conducting an analysis, it is necessary to determine the objectives that can be achieved through the study. Among others, the main purpose

of this study is to predict the bankruptcy possibilities of selected firms enlisted under A category share of DSE. For being specific, this study aims to achieve following objectives:

➢ To find out the bankruptcy possibilities for selected firms through using Z Score.

➢ To apply One Way ANOVA to find out whether there is uniformity on the financial performance among the selected firms by considering standard deviation in performances over the years at alpha level 0.05.

➢ If uniformity is not found, to apply Homogeneous Subsets test to find out where the substantial differences lie among the companies.

3. Literature Review

Bankruptcy studies always aim at finding out financial characteristics of those companies which are likely to be addressed for bankruptcy and should be distinguished from those companies which are not. The goal of developing such bankrupt prediction model is to foresee which companies will possibly be addressed as bankrupted a few years prior to the actual bankruptcy incident. There are many models for predicting bankruptcy. Most of them were developed based on financial ratios derived from financial statement of companies. One of the early studies conducted by Paul Fitzp (1932) developed bankruptcy prediction model. Similarly Altman (1968), Zmijewski (1984), Kida (1998), Shirata (1998) and Shumway (2001) developed different models for predicting bankruptcy successfully. Conversely, an earlier study conducted by Morris (1998) argued that, bankruptcy is due to unforeseeable events and therefore cannot be predicted. Among other models, the corporation bankruptcy model was developed by Altman in 1968 in the name of Altman's Z Score which is considered as the most accepted and widely used tool, used by Mizan, Amin and Rahman (2011). On the other hand, Chava and Jarrow (2004), Abdullah et al. (2008) found some other models more appropriate than Altman Z Score in their respective countries.

Altman (1968) noted that ratio measuring liquidity, solvency and profitability are the most significant indicators although the order of their importance is not so clear. As a result, Altman undertook multiple discriminant analysis for determining the soundness and bankruptcy prediction of the firms. Initially Altman selected sixty six firms to establish the function which best discriminates between firms which were being separated in mutually two exclusive groups: Bankrupt firms and

Non Bankrupt firms. The developed model by Altman from this analysis had a tremendous accuracy of 95% in classifying the sample correctly. Based on this finding, Altman concluded that Z Score model is an accurate forecaster of predicting the failure prior to two years of actual bankruptcy incident. The ratios used in this model are Net Working Capital/Total Assets, Accumulated Retained Earnings/Total Assets, EBIT/Total Assets, Market Value of Equity/Total Liabilities and Sales/Total assets.

Altman's Z Score model is used in multiple countries for predicting bankruptcy. Al-Rawi, Kiani and Vedd (2008) used this model to predict the bankruptcy situation for a firm named "Jordan Establishment". The Z Score of the firm was less than 1.81 for the time period of 2002 to 2004. The researchers here made the comment that this firm will be facing bankruptcy in the near future. In relation to this study, Gerantonis and Christopoulos (2009) investigated to find out whether Z-Score model can predict bankruptcy before three years. They found a positive result from the investigation regarding the prediction of failures before three years. They also suggested that this model can be successfully used by firm's management in financing decision, by regulatory authorities and portfolio managers in stock selection. In the same time, Ramaratnam and Jayaraman (2009) also used this model to measure the financial soundness of steel industry of India. This study was conducted on a time period of five years (2006-2010) by selecting five firms under steel industry. Their conclusion revealed that this model successfully found financial soundness in all selected companies during the observed periods. On further study, Alkhatib and Bazour (2011) conducted almost a similar study regarding bankruptcy prediction in Jordanian listed companies by following both Altman's Z Score model and Kida model. The study was based on sixteen nonfinancial and manufacturing companies for the period of 1990 to 2006. As per their results, Altman's Z Score predicted the bankruptcy situation before five years of the actual liquidation incident with a 93.8% confidence while Kida model found the same result with a 69% confidence. The researchers in this study advised all the Jordanian listed companies to apply Altman's Z Score with high credibility for predicting bankruptcy incident.

In Bangladesh, it is also not new for the researchers to apply Altman's model in different studies. Chowdhury and Barua (2009) applied Z Score to detect the financial distress of Z categories share traded in DSE. They selected 53 companies with Z category share and did the Z Score analysis in a period from 2000 to 2005. They concluded that although Altman's Z

Score model might not be fully suitable in Bangladesh for predicting bankruptcy, yet proved it is strong validity and correctness in predicting financially distressful status of the Z Category companies. Later Mizan, Amin and Rahman (2011) undertook a study where they selected six leading companies of pharmaceutical industry of Bangladesh and applied Z Score model for predicting bankruptcy. The result of the study showed that, two companies seemed to be financially sound and having no chance of being bankrupted in the near future, but other companies had a significant possibility of being bankrupted in the near future. Like this previous study, Mizan and Mahabbat (2014) also applied Z Score model to the cement industry of Bangladesh. They selected five DSE listed companies inside the industry and applied Z Score to predict the bankruptcy. The study showed that, among the sample units, two of the companies (Heidelberg Cement and Confidence Cement) were financially sound having no chance of bankruptcy in the near future, whereas other three companies were not in a good position and were on the verge of being bankrupt.

4. Methodology of the Study

The main concern of the study is to analyse the possibilities of bankruptcy of selected companies of the textile industry in Bangladesh. Two stock exchanges are established and they are already running their operations (Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE)) in Bangladesh. As the biggest and oldest stock exchange of Bangladesh, researchers only considered DSE for the analysis. There are 45 companies listed under the textile sector of DSE. Researchers set 5 parameters for selecting the appropriate companies to conduct the analysis. Parameters have been set by considering the rules of thumb in different categories under the textile industry of Bangladesh. Those parameters are:

A. All companies have to be listed under A categories share.
B. More than 10 years of successful operation after being enlisted with DSE.
C. Have more than TK 1 as EPS over the years.
D. Have more than TK 900 million as market capitalization at the time of selecting the companies.
E. Have more than 14 times as Price Earning Ratio (P/E) ratio over the years.

Among 45 companies, it was possible to select only 8 companies which satisfied all parameters. Those 8 companies are:

Table 1: Chosen Textile Companies of DSE for the Analysis

SL	Name of the Companies
1.	Square Textile Ltd. (ST)
2.	Saiham Textile Ltd. (SHT)
3.	Rahim Textile Ltd. (RT)
4.	Prime Textile Ltd. (PT)
5.	Mithun Knitting and Dyeing Ltd. (MKD)
6.	Desh Garments Ltd. (DGL)
7.	Apex Spinning Mills Ltd. (ASM)
8.	Alhaj Textile Ltd. (AT)

For conducting the analysis, 8 years (2017, 2016, 2015, 2014, 2013, 2012, 2011 and 2010) of annual reports of all companies have been collected from DSE library. Other data have been collected from different other sources. The hypothesis researchers has taken are

H_0 = The mean value (Performance indicator) of X_1, X_2, X_3, X_4, X_5 and Z score are uniform in the sample units.

H_1 = The mean value (Performance indicator) of X_1, X_2, X_3, X_4, X_5 and Z score are not uniform in the sample units.

For analysing the financial performance and predicting bankruptcy of the sample units, Altman Z Score has been used and One Way ANOVA has used to test the uniformity among the performance of the sample units. Then, Homogeneous Subsets test has been undertaken to find out the significant difference if any among the performance of the selected companies by considering the standard deviation in performance over the sample years.

By using the following equation of Altman Z Score, the possibility of bankruptcy has been predicted.

$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$

X_1 = NWC/TA. This is the ratio between Net Working Capital to Total Asset of the firm. Net working capital can be found out by deducting total current assets from total current liabilities. This ratio indicates the liquidity state of the firm in relation to total assets. This ratio also measures the firm's ability to pay off the short term obligation timely. Higher ratio indicates a strong liquidity position.

X_2 = ARE/TA. This is the ratio between Accumulated Retained earnings to Total Assets. The ratio measures the situation of accumulated profitability of the firm. If the ratio is higher, it makes the firm look stronger in profitability situation as it indicates firm's higher ability in generating profit and retained them alongside with satisfying the shareholders.

X_3 = EBIT/TA. This is the ratio between Earnings Before Interest and Taxes to Total Assets. It indicates the true productivity of the firm's assets independent of any tax or financial leverage factors. This ratio measures the firm's capacity in paying off its interest. Higher value of the ratio means higher capacity of the firm in meeting the interest payment.

X_4 = MVE/TL. This is the ratio between Market Value of Equity to Total Liabilities. MVE can be found out by multiplying the number of share outstanding with current market price which is available in the secondary market. This ratio shows the existing position of equity in comparison to liabilities of the firm. Again higher the ratio better the firm is.

X_5 = S/TA. This is the ratio between Sales to Total Assets. It measures the efficiency of the firm in generating sales by utilizing the assets. Higher result is indicating higher sales with existing asset level.

The bankruptcy possibilities have been determined through the result given by Z Score. Where

Z Score below 1.8 is likely to be bankrupted in the near future.

Z Score is in between 1.8 to 3 might be heading to bankruptcy in near future.

Z Score is above 3 is considered as financially stable and no possibilities of being bankrupted in the near future.

After finding out the Z Score for each selected companies, One Way ANOVA has been used to test the uniformity and then Homogeneous Subsets test has been used to find out the substantial performance differences among selected companies by considering standard deviations.

5. Analysis and Findings

In this part of the study, the calculation and interpretation of each of the five ratios along with One Way ANOVA and Homogenous Subsets are

presented. Table 2 represents the ratio of X_1 (WC/TA) which is the first part of Altman's Z score. From the table below, we can see that among all the selected companies, five of the companies (ST, SHT, MKD, ASM, AT) have secured positive mean value of the ratio. Among these five companies, AT is holding the most strong liquidity position as it has the highest mean value of X_1 and other two companies which are ST and MKD are also showing promising position as all of them secured a mean value of higher than 20%. ASM and SHT are also having a positive mean value but their value is way below than other companies with positive mean value.

Table 2: The ratio of X_1 (WC/TA) for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	0.26799	0.3705	0.3886	0.4645	0.4403	0.4608	0.2424	0.2086	0.3555	0.1025
SHT	0.16697	0.1905	0.1898	0.2302	0.0502	0.5013	0.1837	0.0663	0.1974	0.1381
RT	-0.0684	-0.2359	-0.2436	-0.27	-0.325	-0.242	-0.087	-0.081	-0.194	0.0995
PT	-0.0053	0.0317	-0.0967	-0.088	-0.039	-0.038	-0.016	-0.003	-0.032	0.0437
MKD	0.32656	0.4658	0.5507	0.3386	0.2581	0.2333	0.1546	0.1369	0.3081	0.1444
DGL	-0.0139	-0.1415	-0.1921	-0.262	-0.327	-0.399	-0.379	-0.368	-0.26	0.1356
ASM	0.0874	0.1098	0.1092	0.1092	0.0807	0.1078	0.0624	0.1368	0.1004	0.0228
AT	0.53041	0.4995	0.4714	0.4166	0.4036	0.3364	0.2622	0.1481	0.3835	0.1291
Mean	0.16146	0.1613	0.1472	0.1173	0.0678	0.1201	0.0529	0.0306		
STD	0.20412	0.2727	0.3063	0.2948	0.2951	0.3267	0.2132	0.1858		

On the other hand, rest of the firms (RT, PT, and DGL) have been having the negative value of X_1 over the years which lead to a negative mean value. This standing indicates working capital shortfall or firm's incapability in meeting their current liabilities immediately like paying the accounts payable or short term creditors. This is a very alarming situation for the companies.

Table 3: One-Way ANOVA of the X_1 Ratio

ANOVA

X_1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.454	7	.493	40.354	.000
Within Groups	.685	56	.012		
Total	4.138	63			

The ANOVA table here is showing the *P* value of less than .05. This indicates the rejection of null hypothesis. So it can be said that there is a significant difference in the mean value of performance among all the selected companies.

Table 4: Homogenous Subsets among all the selected companies

X1

Tukey HSD[a]

Company	N	Subset for alpha = 0.05					
		1	2	3	4	5	6
DGL	8	-2.603008591250E-1					
RT	8	-1.941702866250E-1	-1.941702866250E-1				
PT	8		-3.174321412500E-2	-3.174321412500E-2			
ASM	8			1.003982927500E-1	1.003982927500E-1		
SHT	8				1.973629262500E-1	1.973629262500E-1	
MKD	8					3.080713912500E-1	3.080713912500E-1

ST	8					3.554635126250E-1	3.554635126250E-1
AT	8						3.835294918750E-1
Sig.		.930	.084	.266	.653	.101	.869

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

This table shows where the difference among the companies lies because of which the null hypothesis was rejected. In this table, we can see that

➢ ST has a significant difference in terms of liquidity performance with ASM, PT, RT, and DGL.

➢ AT has a significant difference in terms of liquidity performance with ASM, PT, RT, SHT and DGL.

➢ MKD has a significant difference in terms of liquidity performance with ASM, PT, RT and DGL.

➢ SHT has a significant difference in terms of liquidity performance with AT, PT, RT and DGL.

➢ ASM has a significant difference in terms of liquidity performance with ST, AT, RT, MKD and DGL.

➢ PT has a significant difference in terms of liquidity performance with ST, AT, MKD, SHT and DGL.

➢ RT has a significant difference in terms of liquidity performance with ST, AT, MKD, SHT and ASM.

➢ DGL has a significant difference in terms of liquidity performance with ST, AT, MKD, SHT, ASM and PT.

So, from the homogeneous subset table, it is clear that every selected company has a significant performance difference in terms of X_1 ratio from at least one company in sample units which causes the rejection of null hypothesis.

Table 5: The Ratio of X_2 (RE/TA) for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	0.54567	0.6111	0.5357	0.5874	0.5571	0.5392	0.4273	0.4177	0.5277	0.0698
SHT	0.0928	0.0922	0.0909	0.0939	0.0677	0.0724	0.1425	0.02	0.084	0.0342
RT	0.11386	0.1524	0.109	0.069	0.0478	0.0281	0.0199	0.007	0.0684	0.052
PT	0.01429	0.0312	0.0048	0.0035	0.001	-4E-04	-5E-04	-0.01	0.0055	0.0124
MKD	0.01618	0.0993	0.2038	0.2371	0.197	0.2234	0.1365	0.1477	0.1576	0.0739
DGL	-0.0529	-0.1149	-0.1709	-0.247	-0.299	-0.345	-0.45	-0.428	-0.263	0.1439
ASM	0.24905	0.2226	0.2284	0.2706	0.2651	0.2955	0.2855	0.7495	0.3208	0.1751
AT	0.07163	0.0602	0.0595	0.0622	0.0787	0.0457	0.0555	-2.597	-0.27	0.9402
Mean	0.13133	0.1443	0.1327	0.1346	0.1144	0.1073	0.0771	-0.212		
STD	0.18965	0.2125	0.2045	0.2413	0.2441	0.2572	0.2567	1.0232		

Table 5 represents the ratio of retained earnings (R/E) to total assets (T/A) and this is the second part of Altman's Z Score. From the above table we can see that, among all the concerned companies, six companies (ST, SHT, RT, PT, MKD, ASM) generated a positive mean value of the ratio by considering all the years. Among those, ST is having the largest mean value over the years which indicate the strongest cumulative profitability situation and capability of utilizing the assets most over the years. ASM is also having a strong mean value of 32.08% which also confirms a strong outlook. MKD is able to secure a considerable mean value of 15.76%. But other than these three companies, the rest of the three companies (SHT, RT, PT) are also able to secure a mean value of 8.4%, 6.84% and 0.55% respectively which are very insignificant.

On the other hand, two concerned companies (DGL, AT) are having a negative mean value of this ratio which indicates their incapability of using their assets to generate profit and retained it. In this position, all of them will not be able to meet any sort of uncertainties in future which makes it very risky position for the firms.

Table 6: One Way ANOVA of X_2 Ratio

ANOVA

X_2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.087	7	.584	4.918	.000
Within Groups	6.648	56	.119		
Total	10.735	63			

The above ANOVA table is showing the *P* value of less than .05. This indicates the automatic rejection of null hypothesis. So it can be said that there is a significant difference in the mean value of profitability performance among all the selected companies.

Table 7: Homogenous Subsets among all the selected companies

X2

Tukey HSD[a]

Company	N	Subset for alpha = 0.05	
		1	2
AT	8	-2.704747191250E-1	
DGL	8	-2.633882048750E-1	
PT	8	5.472652000000E-3	5.472652000000E-3
RT	8	6.838791062500E-2	6.838791062500E-2
SHT	8	8.404951137500E-2	8.404951137500E-2
MKD	8	1.576199721250E-1	1.576199721250E-1
ASM	8		3.207806430750E-1
ST	8		5.276507617500E-1
Sig.		.223	.067

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

From Homogeneous subsets table we can easily see that, where the difference of mean value lies because of which the null hypothesis was rejected.

> ➢ ST has a significant difference in terms of profitability performance with AT and DGL.
> ➢ ASM shows a significant difference in terms of performance with AT and DGL.
> ➢ AT does have a significant difference in performance with ST and ASM.
> ➢ DGL has a significant difference in terms of profitability with ST and ASM.

So from homogeneous subsets analysis it is clear that, only for the difference in significant performance between ST, AT, DGL and ASM was responsible for not having a same mean value among the selected companies.

Table 8: The Ratio of X_3 (EBIT/TA) for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	0.05416	0.1554	0.0481	0.1114	0.121	0.1295	0.2303	0.2199	0.1337	0.0671
SHT	0.03754	0.0332	0.0086	0.0736	0.0594	0.0551	0.1879	0.0953	0.0688	0.0549
RT	0.06852	0.1174	0.1054	0.0844	0.1039	0.0804	0.0778	0.0681	0.0882	0.0184
PT	0.01366	0.0125	0.0541	0.0588	0.0313	0.0437	0.0542	0.0384	0.0383	0.018
MKD	-0.0144	0.0732	0.0985	0.1255	0.096	0.1434	0.1005	0.1205	0.0929	0.0484
DGL	0.17657	0.152	0.0709	0.0416	0.0377	0.0322	0.0274	0.0215	0.07	0.0604
ASM	0.03771	0.0352	0.0389	0.0432	0.0122	0.0381	0.0325	0.0891	0.0409	0.0217
AT	0.04158	0.0417	0.0307	0.0538	0.1036	0.0425	0.0962	-0.045	0.0456	0.0454
Mean	0.05191	0.0776	0.0569	0.074	0.0706	0.0706	0.1009	0.076		
STD	0.05632	0.0567	0.0332	0.0312	0.0406	0.0434	0.0728	0.0777		

Table 8 represents the third part of Altman's Z Score, that is X_3 ratio (EBIT/TA). From the above table we can see that, all the concerned companies have a positive mean value where ST has secured the highest mean value of X_3 which indicates a strong position against bankruptcy. MKD was able to secure more than 9% of this ratio showed their solvent position against bankruptcy which was also reflected in the immediate previous analysis of X_2. Other than these companies, SHT, RT, PT, DGL, ASM, AT also have a positive mean value but insignificant. So researchers can decide that no company is in high risky position in terms of capability of meeting the leverage and tax position of the firm although SHT, RT, PT, DGL, ASM and AT should put concentration to improve their position.

Table 9: One Way ANOVA of X_3 Ratio

ANOVA

X_3

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.059	7	.008	4.005	.001
Within Groups	.117	56	.002		
Total	.175	63			

Table 9 is showing one way ANOVA result for X_3 ratio. The calculated significant level here is below 0.5 which rejects the null hypothesis. So, there is a significant difference in the mean value of X_3 among the selected companies. All of firm's performance under this position is not uniform.

Table 10: Homogeneous Subsets among all the selected companies

X_3

Tukey HSD[a]

Company	N	Subset for alpha = 0.05		
		1	2	3
DGL	8	1.320752792100E-1		
ASM	8	2.430319706100E-1	2.430319706100E-1	
PT	8	2.452686776200E-1	2.452686776200E-1	
AT	8	2.502355418100E-2	2.502355418100E-2	
RT	8	1.829009102100E-2	1.829009102100E-2	
SHT	8	1.942816276100E-1	1.942816276100E-1	1.942816276100E-1
MKD	8		1.171719071000E-1	1.171719071000E-1
ST	8			1.624023672000E-1
Sig.		.190	.067	.116

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

Homogeneous subsets test can be undertaken alternatively for post hoc test which will show us the specific reason of rejecting the null hypothesis. This table shows us that,

➢ ST has a significant difference in terms of earning capability to meet leverage with RT, AT, PT, ASM and DGL.

- ➢ MKD has a significant difference in terms of earning capability to meet leverage with DGL only.

- ➢ RT, AT, PT, ASM have a significant difference in terms of earning capability to meet leverage with ST only.

- ➢ DGL has a significant difference in terms of earning capability to meet leverage with MKD and ST.

So it is clear that, more than one selected firms have a significant mean value difference among the sample units which cause the rejection of null hypothesis.

Table 11: The Ratio of X_4 (MVE/TL) for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	5.57937	5.2597	7.8886	12.16	8.2642	7.2082	3.5023	5.6116	6.9342	2.6248
SHT	1.02957	0.7359	0.7863	1.1079	1.4458	1.4104	5.4476	1.2282	1.6489	1.5565
RT	2.44981	2.7494	1.8575	2.158	1.5462	0.6243	0.9541	0.1915	1.5664	0.9077
PT	0.62	0.4074	0.4499	0.5834	0.5351	0.5387	1.6509	0.0738	0.6074	0.455
MKD	8.63945	6.9865	6.9028	40.218	13.2	8.7999	2.962	2.884	11.324	12.139
DGL	10.7437	4.7839	1.0921	2.09	0.6826	1.0192	0.1884	0.6125	2.6515	3.5766
ASM	1.10089	0.762	0.8267	1.1203	0.6129	1.35	2.5684	1.5186	1.2325	0.6188
AT	6.13457	4.8554	4.9421	6.3634	3.6223	1.3373	2.6913	-2.866	3.385	3.0433
Mean	4.53717	3.3175	3.0933	8.225	3.7387	2.786	2.4956	1.1567		
STD	3.8322	2.4996	3.0215	13.504	4.6206	3.265	1.6214	2.4364		

X_4 ratio (MVE/TL) is the fourth part of Altman's Z score. From the table above, it is identifiable that MKD has the highest mean value because of its value in 2014 (40.21 times) which is abnormally higher than any other concerned firms. It has also the highest level of variation (STD=12.139). ST is able to have 6.9342 times as mean value for maintaining the position stably over the years. On the other hand, DGL has a mean value of more than 2 times which is able to make the stockholder happy regarding the performance of the respective companies. But RT, PT, SHT, AT and ASM has a mean value which is very lower than the average of the mean value of the selected companies over the years. So they need to improve this condition to get into the competition with other concerned firms of accumulating fund from the outside sources in future.

Table 12: One Way ANOVA of X_4 Ratio

ANOVA

X_4

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	753.516	7	107.645	4.781	.000
Within Groups	1260.927	56	22.517		
Total	2014.443	63			

The above ANOVA table shows a *P* value of less than .05 which rejects the null hypothesis. So there must be significant difference on the mean value of at least one company with other concerned firms.

Table 13: Homogenous Subsets among all the selected companies

X4

Tukey HSD[a]

		Subset for alpha = 0.05	
Company	N	1	2
PT	8	6.074084347500E-1	
ASM	8	1.232472587500E0	
RT	8	1.566358212000E0	
SHT	8	1.648949680500E0	
DGL	8	2.651549967375E0	
AT	8	3.384989513000E0	
ST	8	6.934257263000E0	6.934257263000E0
MKD	8		1.132406627212E1
Sig.		.155	.590

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

This table is showing us the difference among the average performance level of the selected companies. From the subset table, we can see that,

➢ MKD has a significant difference in terms of solvency performance with ASM, RT, DGL, PT, SHT and AT.

➢ ASM, RT, DGL, SHT, PT and AT have a significant difference in terms of solvency performance with only MKD.

So from this table it is observed that, only because of the performance level difference of MKD is responsible to reject the null hypothesis.

Table 14: The Ratio of X_5 (Sales/TA) for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	0.76201	1.3551	0.396	0.8166	0.8238	0.8827	0.7263	0.6729	0.8044	0.2678
SHT	0.35178	0.406	0.3915	0.3638	0.4167	0.2708	1.1087	0.7188	0.5035	0.2775
RT	0.64062	0.9615	0.9588	0.8095	1.0013	0.7294	0.5963	0.5457	0.7804	0.1794
PT	0.12848	0.1143	0.5002	0.5599	0.3201	0.4137	0.5494	0.3986	0.3731	0.1749
MKD	0.53397	0.6517	1.105	1.4911	1.3492	1.4359	1.3777	1.7044	1.2061	0.4143
DGL	1.57216	1.6609	1.6822	1.2196	1.4562	1.5562	2.1175	1.9818	1.6558	0.2847
ASM	2.41867	2.317	2.2105	2.2105	2.0698	2.4077	2.0846	4.0005	2.4649	0.6342
AT	0.53008	0.716	0.5285	0.5934	0.8797	0.9765	0.4496	0.0084	0.5853	0.2963
Mean	0.86722	1.0228	0.9716	1.008	1.0396	1.0841	1.1262	1.2539		
STD	0.75616	0.7205	0.6702	0.608	0.5744	0.6957	0.6757	1.292		

Table 14 depicts the ratio of X_5 (Sales/TA). From the table it is visible that ASM has secured the highest mean value under this ratio during the observed years which made them most efficient in utilizing assets. Other two companies (DGL and MKD) are performing almost in the same level respectively achieved 1.66 and 1.21 under this ratio. And the rest of the companies (ST, SHT, RT, PT and AT) secured a mean value of lower than 1. This standing suggests their incapability of using the assets in the same efficiency level as companies with mean value of higher than 1. So those five selected companies should improve their position in this issue to survive in the competition.

Table 15: One Way ANOVA of X$_5$Ratio

ANOVA

X$_5$

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.993	7	3.999	33.528	.000
Within Groups	6.679	56	.119		
Total	34.672	63			

The above ANOVA table is showing a *P* value of less than .05 which leads to the rejection of null hypothesis. So, there is a significant difference somewhere in the mean value among selected companies. Later on homogeneous subsets test will be observed to find out the underlying difference in the performance level of selected companies.

Table 16: Homogeneous Subsets among all the selected companies

X$_5$

Tukey HSD^a

Company	N	Subset for alpha = 0.05			
		1	2	3	4
PT	8	2.548328219200E-1			
SHT	8	5.685750777200E-1			
AT	8	5.421516355600E-1			
RT	8	4.736444753600E-2	4.736444753600E-2		
ST	8	2.894463893200E-2	2.894463893200E-2		
MKD	8		1.581674047000E-1	1.581674047000E-1	
DGL	8			1.777248620200E-1	
ASM	8				3.665612481800E-1
Sig.		.849	.073	.991	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

This table shows us the difference of mean value among concerned company by which we understand the specific situations behind the rejection of null hypothesis. It is observed that

➢ ASM has a significant difference in terms of asset utilization performance with the rest of the selected firms.

➢ DGL has a significant difference in terms of asset utilization performance with ASM, ST, RT, AT, SHT and PT.

➢ MKD has a significant difference in terms of asset utilization performance with ASM, AT, SHT and PT.

➢ ST and RT have a significant difference in terms of asset utilization performance with ASM and DGL.

➢ PT, SHT and AT have a significant difference in terms of asset utilization performance with ASM, DGL and MKD.

So it is shown that, more than one selected firms have significant mean value difference among the sample units which cause the rejection of null hypothesis.

Table 17: The Z Score for the selected companies

Company Name	Year								Mean	STD
	2017	2016	2015	2014	2013	2012	2011	2010		
ST	5.37386	6.3239	6.5042	9.8596	7.4899	6.943	4.4766	5.6006	6.5715	1.6312
SHT	1.42369	1.3148	1.2468	1.6792	1.6351	2.0019	5.4173	1.8779	2.0746	1.376
RT	2.41399	2.9288	2.2814	2.1553	1.949	1.1178	1.3487	0.7975	1.8741	0.7232
PT	0.55917	0.4818	0.8393	1.0026	0.6991	0.8355	1.6989	0.5523	0.8336	0.3916
MKD	6.08449	5.783	6.518	26.774	10.171	7.7817	3.8632	4.2037	8.8975	7.4937
DGL	8.51037	4.7022	2.1017	1.9508	1.1796	1.3114	1.2364	1.3802	2.7966	2.5839
ASM	3.65718	3.3337	3.2859	3.5351	2.9456	3.8866	4.2075	6.4194	3.9089	1.0851
AT	5.08481	4.4504	4.2442	5.176	3.9894	2.3867	2.7743	-5.318	2.8485	3.4465
Mean	4.13844	3.6648	3.3777	6.5166	3.7574	3.2831	3.1279	1.9392		
STD	2.63789	2.0548	2.2107	8.6677	3.3712	2.6994	1.5891	3.6804		

Table 17 represents the calculated Z Score for the selected companies. If we are observing the values in the table, MKD is showing very promising performance over the years having the highest mean value of 8.8975 because of its highest value of Z Score (26.77) in year 2014. The next best is ST secured a mean value of 6.57. After that, we should consider ASM as financially sound company as it maintains a value of Z Score higher than 3 in almost every observed year. This performance of ASM leads it to achieve a mean value of 3.91 which also indicates that, the firm is financially stable and does not have any chance of being bankrupted in the near future. Only SHT, DGL, RT and AT are in the grey zone which indicates it might be leading to bankruptcy in the near future if corrective steps are not taken as they have a mean Z Score value which is in between 1.8 and 3. PT is at the verge of being bankrupted as its mean value is lower than 1.8. So the management of the company should take major

restructuring decisions both in internal and external environment to save the company. The financial condition of PT is a great concern for both stockholders and stakeholders which will make difficulties for the firms to accumulate external capital as well in the future.

Average of the Z score in every year shows financial soundness as it is above 3. In this situation, ASM, MKD and ST have been always maintaining financially sound positions. So these companies will be the best choices for the investors to invest their fund in the future. For investing into other concerned firms, the investors should consider the decision of investing the fund seriously.

Table 18: One Way ANOVA of Z Score

ANOVA

Zscore

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	408.246	7	58.321	5.752	.000
Within Groups	567.831	56	10.140		
Total	976.077	63			

The ANOVA table of Z Score has shown that a *P* value of less than .05 which indicates the mean value of Z Score is not uniform among the sample units. So the performances of the sample units avoiding financial distress situations over the years are not uniform by considering the standard deviations.

Table 19: Homogeneous Subsets among all the selected companies

Zscore

Tukey HSD[a]

		Subset for alpha = 0.05		
Company	N	1	2	3
PT	8	8.335912213750E-1		
RT	8	1.874076457875E0	1.874076457875E0	
SHT	8	2.074565272750E0	2.074565272750E0	
DGL	8	2.796591380750E0	2.796591380750E0	
AT	8	2.848461250875E0	2.848461250875E0	

ASM	8	3.908857098875E0	3.908857098875E0	3.908857098875E0
ST	8		6.571454667750E0	6.571454667750E0
MKD	8			8.897459387000E0
Sig.		.536	.082	.052

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.000.

Alternative to Post Hoc test, Homogeneous subsets test is shown here which will indicate the differences among performances in sample units by considering the standard deviations. From this above table it can be observed that,

➢ MKD has a significant difference in terms of performance regarding Z Score with all the concerned firms other than ST and ASM.

➢ PT exhibits difference in terms of performance regarding Z Score with ST and MKD only.

➢ On the other hand, RT, SHT, DGL ad AT does have a significant difference in terms of performance regarding Z Score with MKD only.

So we can say, only because of high performance of MKD in all the observed years, the performance of sample units are not uniform by considering the standard deviation which violates the condition of accepting null hypothesis. As a result it has been decided that, there is a significant difference in mean value of Z Score of at least one company in sample units.

6. Conclusion

This kind of study is not the first in emerging economies like Bangladesh, but deriving outputs give different scope and it remained unexplored with the earlier studies. Textile industry is booming to a great extent in Bangladesh currently. It is also one of the largest sources of boosting up the level of foreign currency reserve of the country which is very important for the overall economy. The financial health of the firm is one of the most important issues for all the stakeholders. Based on the soundness of the firm, stakeholders take decisions regarding getting involved with the firm. And Altman's Z Score is the most suitable method to find out the financial soundness of the firm which can shape the

decisions of the stakeholders. This study has been undertaken to assess the financial health of the chosen A categories firms under the textile industry of Bangladesh. This study revealed that among the 8 selected firms for the study, only three firms (MKD, ST and ASM) are found in a promising position of achieving financially soundness over the sample years as they all have higher Z Score than the benchmark (3.00). SHT, DGL and AT are in the grey zone which requires special attention of the management to improve the financial situation of these firms immediately. Otherwise, if this trend goes on for these companies; SHT, DGL and AT will be bankrupted in the near future. The other two firms (PT and RT) are already in financial distress and are on the verge of being bankrupted. Thus, the management of those firms should initiate elaborate and long term strategy as soon as possible to reverse the situations and the investors should be careful in investing their fund in those companies.

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Impact of Facebook Advertisement on the Buying Behavior of Bangladeshi Youth Groups

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Abstract

In recent years, the rising activities of social media are extremely dominating television and the internet. It has also created a new progression of business opportunities. For example, social media has become online communities for youth groups. The accessible internet facilities have made people to employ social media particularly Facebook for interacting with each other without the need for physical appointment. This paper predominantly aims to analyze and identify the influential factors of Facebook advertisement on the buying behavior of youth groups of Bangladeshi consumers. Using descriptive statistics and Factor Analysis, the paper identifies and discusses mainly five important factors that influence Bangladeshi youth groups in purchasing products and services advertised on the Facebook. These analyses indicate that Facebook advertisings on the buying behavior of this segme1nt is positive. The paper also discusses implications for retail brand managers about how to make effective Facebook advertisements for attracting the youth groups of Bangladesh.

Keywords: Facebook Advertisements, Youth, Behavior.

1. Introduction

The demand and making quality advertisements remain a big concern for decades in the world. In recent years, the internet has created a new advancement of business opportunities. Effective communication is probably the most important factor for developing the customer's behavior and retaining them for a long time towards any specific product or service. For example, social media is used as online communities (Lu, Zhao, & Wang, 2010). Now, individuals can spontaneously access and share information with the help of emerging social media and online communities (Chen, Xu, & Whinston, 2011).

1.1 Problem Statement

The availability of internet has given the opportunity to the people to use social media and Facebook is one of the mediums that has made it

possible to interact with people without the need for physical appointment (Gruzd, Wellman, & Takhteyev, 2011). During the last couple of years, the growing activities of social media are incredibly dominating television. To reach out 50 million audiences' radio had to spend more than 30 years while television reached out this number in 13 years. Surprisingly, internet managed to embrace this number in only four years, Facebook alone touched this milestone only one and a half years (Civelek, 2009; Hayta, 2013; Şener, 2009)

According to Facebook statistics (January, 2018) Facebook has more than 2.07 billion monthly active users which is a 16% rise year over year. Approximately 1.28 billion people log onto Facebook daily which is a 17% rise year over year. In addition, around 1.37 billion people access Facebook daily by mobile phone which is a 16% rise from last year. Surprisingly, 50% of young people (between 18-24 years) go on Facebook when they wake up (Zephoria, January 2018) . Facebook is a very popular social networking site for the young group; it is calculated roughly that around 76% young generation in (between 18-34), are the prime users of Facebook (Christofides, Desmarais, & Muise, 2010). (Su, 2010) described that more than 56.9 million of a total of 71.4 million Spanish-language users on Facebook are under 35 years. Previous studies showed that young group is very much keen on to join social networking sites to keep in touch with friends & family, even making new friends and meeting new people on online (Acquisti & Gross, 2006). In Bangladesh, Dhaka is the second largest city in terms of having the most active Facebook with 1.1% (22,000,000) of the total monthly active users of the social networking site across the world while the first position goes to the USA with 11% (219,000,000) active users in Facebook (Murad, 2017). Whereas in other countries in their research in Russia, Poland, Romania, Belarus and Ukraine two out of ten are internet users (Global, 2015).

According to (Su, 2010) there is no option to deny that youths are the prime users of Facebook. Therefore, Facebook is becoming a lucrative channel to place the advertisements for youth group. Over the years, many studies have been conducted about this aspect in different countries, but no researchs have been done yet so far on the buying behavior of the youth group of Bangladesh. Considering the huge marketing prospective, flourishing usage and comprehensive devolvement of Facebook in this country, this study is designed to seek the influence of Facebook advertisement on the buying behavior of youth groups of Bangladesh.

2. Literature Review

The advancement enables customers as well as marketers to collaborate themselves on the internet (Füller, Mühlbacher, Matzler, & Jawecki, 2009) and the correlation between individuals has enlarged on the internet because of the internet's progression and the great improvement of Web 2.0. In addition, online social network sites change the thoughts of marketing and enable the companies and consumer's straight interaction and relationship with each other (Solomon, Bamossy, Askegaard, & Hogg, 2010). For instance, Facebook is one of the most vital social networking sites for these activities. Facebook was initially designed to communicate within a certain area, only for Harvard students and the website launched by Mark Zuckerberg on February 4, 2004. Facebook is a common platform to create personal profile, share individual's thought by status, sending messages to friends and family and so on. Just after a few years, the website has become one the most popular social networking site in the world. Facebook actually permits users to post pictures, videos, customize their profile content and to share their personal thoughts towards an object or a particular issue. (Ellison, Steinfield, & Lampe, 2007) who made a research on "The benefits of Facebook friends: Social capital and college students' use of online social network sites" illustrated that people use facebook to interact with others they already know offline or to make new friends by adding them friend on their friend list. Facebook has made an opportunity to make a personal profile by which users can present themselves on virtual era. According to (Livingstone, 2008) Facebook gave a greater platform for youth groups to share their emotions and personal views towards an object or particular issue by putting their comment.

2.1 Purchasing Behavior of Youth Group

The option of which product the consumer will decide to purchase depends on both formal and informal sources of information. Input, process and output are the three stages of consumer purchasing behavior by which one decides to buy the product. Marketers can internally provide information to the consumers by using four P's of marketing, whereas external information can be collected through some informal sources such as friends, family or words of mouth. In the processing stage information is blended with experience, knowledge, perceptions and cultural norms and belief of a customer. Output stages are involved with two sub-stages as pre purchase and post purchase evaluation (Schiffman & Kanuk, 2004). In selection of buying behavior of Facebook advertisements, consumers

can receive information regarding a particular product or service both from internal and external sources; processing of information is also easy due to the presence of available information on facebook and it is easy to compare and select between two same categorized products. According to (Jainarain, 2013) the youth is deliberated as a very crucial segment of market due to their continuous access on the internet to find out necessary information and prudent judgment of it make them a significant consumer segment. According to (Macgregor, 2004) today's youth are not only more confident to consume only for themselves, but also can influence their family in purchasing decision. As compared to the previous generation, today's youth are more confident and independent consumers due to their frequent access on digital and internet arena and ability to influence others. According to (Torlak, Spillan, & Harcar, 2011) if a company wants to get a major market share in future, there is the only way to achieve the goal by targeting youth groups as a major segment. In addition, in the recent era, youth groups are more concerned about technology. They use various social networking sites as Facebook, twitter etc.; they are self-innovators to find out their desired things and like to make online transactions (Ernst & Young, 2012)

2.2 The Advantages of Facebook Advertising

According to (George, 2016) Facebook Advertisements can reach more audiences at a time and through Facebook Ads it is quite easy for marketers to find out their desire target group. A Facebook ad is considered as one of the easiest ways to advertise. In this case, previous experiences of marketing are not needed to start Facebook Ads. In addition, marketers do not need to set up a big budget to place their ads on Facebook. Because the cost of Facebook ads is as cheap as five dollars. Mark Zuckerberg, the founder and Chief Executive Officer (CEO) of Facebook, explained the importance of Facebook advertising, "It's no longer just about message that are broadcast out by companies, but increasingly about information that is between friends. So we set out to use these social actions to build a new kind of ad system" cited in (Piskorski, Eisenmann, Chen, & Feinstein, 2010). Indicating the advantage of Facebook advertising, (Manning-Schaffel, 2009) he illustrates : "The ease of creating content makes it so that we get very high engagement, far beyond typical page views. It also gives us a great platform to listen to the feedback we receive from our consumers. Every time we post photos, videos or status updates from the page, our fans are quick to tell us what

they think. Their feedback is shared with their network of Facebook friends, exposing them to our fan page". Upholding the above statements, (Manning-Schaffel, 2009) described that "Facebook helps us get a pulse on what is important to our customers. We can have a real dialogue with them about the values and ideas that they share with us". In line with the above affirmation, "Facebook is an effective marketing platform because networking and communication are already taking place. This allows companies to be directly woven into conversation simply by appearing on the site" (Roberts, 2010). "One of the key advantages of Facebook and other similar platforms is measurability. Companies are able to actually measure the performances of their communication on a near moment-by-moment basis. It allows advertisers to better understand their customers, and target their respective audiences more effectively, while incurring less advertising waste, thereby managing their resources more efficiently" (Solaja & Odiaka, 2010). Facebook automatically chooses key words or details of targeted customer group to run Facebook advertisements such as relationship status, interest, place, activities, preferred books and employment even which page or website people visit more and then Facebook drives the advertisements on the basis of these. For example, if someone likes cupcakes, he has to inhabit a definite neighborhood and invites friends over, anticipating an advertisement from a neighboring bakery to come into sight on their page (Andrews, 2012).

3. Research Questions

The current study aims to fill up the research gap in the literature by investigating the following important research questions:

a) What are the imperative factors that influence youth groups to purchase products and services advertised on Facebook?

b) What are the factors that encourage only Bangladeshi consumers to prefer products and services promoted on Facebook?

c) What are the guiding principles for online advertising (FB ad) strategy formulation?

Answers to these questions are likely to be significant not only to the brand managers and advertisers of multinationals operating in Bangladesh, but also to the local businesses in terms of understanding of the dynamics of making effective communications strategies for attracting online consumers.

4. Objective of the Study

The purpose of this study is to examine the factors that influence the Bangladeshi youth groups to purchase products and services advertised on Facebook.

5. Methodology of the Study

The study group has taken into account the young consumers of Bangladesh who have various demographic and socio-economic features and especially the use of Facebook. The study group is pretty large: a total of 168 Bangladeshi participants filled up the questionnaire. Primary and secondary data were collected from two sources; one was primary data that were collected from survey where participants were from different professions but especially from the university students. Survey questionnaires were made in Google docs' service and paper made also, online questionnaires were created to ensure random participation from all over the country. Secondary data were collected from various research publications, books, internet etc. The Likert scale was used to assess the youth's buying behavior in Bangladesh and close-ended questions were also used to collect demographic data about the youth groups. The questions were graded from Strongly Disagree to Strongly Agree on a five point Likert scale. Those who were within the age range of 18-35 were considered as the target population for this research for observing the common scenario of youth's buying behavior upon Facebook Advertisements. SPSS 22.0 package program was used to analyze research data and descriptive statistics was conducted to observe demographic information, frequency of the countries' consumer behavior on Facebook advertisement were employed to analyze the primary data.

Factor analysis was also used to observe the most influential factors for the buying behavior of the youth groups about the products and services advertised on Facebook. The scale was prepared with 19 items. Factor analysis was used to determine the structure validity of the scale. According to the results of the Principal Components Analysis, Kaiser-Meyer Olkin (KMO), the value is found to be 0.928. The value found using the Bartlett test (1.842E3, df=171) is significant (p<.001). The KMO value over 0.60 and significant result of the Bartlett test show that factor analysis is appropriate for this study (Büyüköztürk, 2007).

6. Data Analysis, Findings and Discussion

The questionnaire was sent out to the people through social network like Facebook and documented question paper handed in person to person, where 168 Bangladeshi people filled in the questionnaire. Questionnaire was made by using Google Doc File for online survey and documented question paper for personal interview.

6.1 Descriptive Statistics

Table 1: Frequency Table of Consumer Behavior on Facebook Advertisement

Table 1: Comparative Frequency Table of Two Different Countries Consumer Behavior on Facebook Advertisement

Contents	Bangladesh				
Gender	Male-146			Female-22	
	86.9%			13.1%	
Age	18-23	24-29			30-35
	52.8%	46.4%			1.8%
Occupation	Job holder	Students of collage	Students of a university		Other
	13.7%	1.8%	82.1%		2.4%
Marital status	Single	Married	Other		
	92.3%	6.5%	1.2%		
How long have you been using FB?	Lass than 1 years	2 Years	4 years	More than 5 years	
	0	8.3%	36.9%	54.8%	
How many Facebook friends do you have?	0-500	501-1000	1001-2500	2501-5000	
	23.2%	26.2%	35.1%	15.5%	
How many hours per day do you spend on Facebook ?	0-59 minutes	1-2 hours	2-3 hours	More than 3 hours	
	12.2%	36.3%	28.9%	22.6%	
Which device do you use to access FB ?	Mobile device	PC	Mobile device and PC		
	40.5%	4.1%	55.4%		

In Bangladesh, maximum respondents were young group and male participants were about four times higher than female. 51.8% in between 18-23 aged and 46.4% in between 24-29 aged consumers and rest percentages are other aged group. The occupation of the respondents are: students of a university (82.1%), Job holder (13.7%), Students of collage was (1.8%) and others only (2.4%) respectively. The marital status of the Bangladeshi respondents are single (92.3%). 54.8% respondents are using FB for more than 5 years while the second position users use FB is 4 years with 36.9%. Research shows that youth groups have an intention to make more friends on FB, 35.1% respondents have 1001-2500 friends. It can also be pointed out that in Bangladesh, 55.5% users use both Mobile device and PC to access on FB and 40.5% are Mobile device users. 36.3% users use FB for 1-2 hours on a daily basis, 28.9%; 2-3 hours, 22.6%; more than 3 hours and 12.2%; 0-59 minutes in Bangladesh.

Table 2: Descriptive statistics of Bangladeshi Youth Groups' buying behavior of on Facebook Advertisement

Table 2: Buying Behavior of Bangladeshi Youth Groups on Facebook Advertisement

Statements	N	Mean	Std. Deviation
1.I will buy products that are advertised on FB in the near future	168	3.56	.983
2.I desire to buy products that are promoted on FB	168	3.44	1.025
3.Advertisements on FB do not increase purchase intention of featured brands	168	2.39	.991
4.Advertisements on FB have a positive influence on my purchase	168	3.77	1.114
5.I would buy the products that are advertised on FB if I had the money	168	3.73	1.181
6.I do not intend to acquire products that are promoted on FB	168	2.53	.978
7.I like to take a chance and purchase items advertised on FB	168	3.60	.924
8.Advertisements on FB have a negative influence on buying decisions	168	2.32	1.106
9.Advertisements on FB make me less loyal to brands	168	2.29	.987
10.I use many of the products that are promoted on FB	168	3.21	1.127

11.I share positive advertisements to my FB friends and colleagues	168	3.68	.980
12.Information of FB is more reliable than traditional advertising	168	3.35	1.067
13.There is no difficulty in obtaining information on brands and products on FB	168	3.50	.935
14.Informationon FB is the new electronic word - of - mouth marketing	168	3.89	.929
15.FB advertisements have encouraged me to engage in purchasing activity	168	3.60	1.062
16.I like to purchase new brands advertised on FB before others do	168	3.33	.995
17.FB ad offers me a variety of products / items	168	3.65	.876
18.I am satisfied with the amount of information on brands and products I can attain on FB	168	3.38	1.025
19.I would like to recommend my friends and colleagues to purchase products advertised on FB	168	3.49	1.105

Descriptive statistics of youth groups' buying behavior represent that the Facebook advertisements positively influence the buying behavior of the Bangladeshi youth groups.

6.2 Factor Analysis

A factor analysis was useful to identify the factors and explore how Facebook advertisements influence the buying behavior of the Bangladeshi consumers. In this study respondents were asked to identify the factors that affect their purchasing behavior through the Facebook advertisements. Based on the review of literature 19 statements have been framed on the five point Likert's scale which ranges from strongly disagree to strongly agree.

Table 3: KMO and Bartlett's Test

Statements		Bangladesh
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.928
Bartlett's Test of Sphericity	Approx. Chi-Square	1.842E3
	df	171

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Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.928
Bartlett's Test of Sphericity	Approx. Chi-Square	1.842E3
	df	171
	Sig.	.000

Table 4: Total Variance Explained

Component	Initial Eigenvalues of Bangladesh		
	Total	% of Variance	Cumulative %
1	9.460	49.790	49.790
2	1.669	8.785	58.575
3			

The most important factors have been identified concerning the respondents' buying behavior of Facebook advertisements using the rotated component matrix analyses and it is based on varimax rotation method. By the way the researchers used the process followed by (Malhotra, 2008). It is notably indicated by the Bartlett's test of sphericity that the high correlation exists among the variables and it is showing that the value of chi-square statistics is 1.842E3 with 171 degrees of freedom, at 5% significance level for Bangladeshi consumers. The value of KMO statistics (0.928) is also bigger (> 0.5). For this reason the factor analysis can be utilized as a suitable procedure to examine the data. Therefore, the factor analysis was proved to be the fitting preference for the study. This examination yielded a 2-factor solution that explained 58.575% of the variance as illustrated in Table 4. The two major factors for BD have been identified according to the variables that have higher load under one factor, as (1) Encouraging and motivational factors of FB ads; (2) Negative aspiration of products that are advertised on FB. Therefore, giving importance on these factors would enable the marketers to increase brand image in providing advertisements on Facebook and influence in making the right decision.

Table 5: Influential Factors of FB Ads on the Buying Behavior of Bangladeshi Consumers

Serial No.	Factor Named as	Initial Eigen Values	% of Variance	Cumulative %
1	Encouraging and motivational factors of FB ads	9.460	49.790%	49.790%
2	Negative aspiration of products that are advertised on FB	1.669	8.785%	58.575%

Table 6: Results of Rotated Component Matrix: Influences of FB Ads on Bangladeshi Consumers

Factor Name	Variables	Factor loading	% of variance explained
Encouraging and motivational factors of FB ads (Alpha Reliability = 0.948)	V19 (Recommend friends and colleagues)	.818	49.790%
	V12 (More reliable)	.769	
	V15 (Engaged in purchasing activity)	.762	
	V7 (Take a chance and purchase items advertised on FB)	.743	
	V16 (Purchase new brands)	.739	
	V13 (No difficulty in obtaining information on brands and products on FB)	.733	
	V10 (More usage facilities)	.730	
	V11 (Share positive advertisements)	.719	
	V17 (Variety of products / items)	.686	
	V5 (Available pocket money)	.685	
	V4 (A positive influence on my purchase)	.677	
	V14 (New electronic word - of - mouth marketing technique)	.673	

Factor Name	Variables	Factor loading	% of variance explained
	V1 (Buy products in the near future)	.666	
	V18 (Varieties of information about different brands and products)	.647	
	V2 (Items promoted on FB)	.641	
Negative aspiration of products that are advertised on FB (Alpha Reliability = 0.723)	V9 (Make less loyal to brands)	-.789	
	V8 (A negative influence on buying decisions)	-.754	
	V6 (Not increasing intention to acquire products)	-.635	8.785%
	V3 (Not increasing purchase intention of featured brands)	-.632	

This study indicates that 'Encouraging and motivational factors of FB ads' deals mainly with the influential factors elucidating the maximum variance (49.790%) in the dependent variable for the Buying Behavior of Bangladeshi Consumers. The sixteen variables contained in this key factor are: Recommend friends and colleagues, More reliable, Engaged in purchasing activity, Take a chance and purchase items advertised on FB, Purchase new brands, no inconvenience in acquiring information on brands and products on FB, More usage facilities, Share positive advertisements, Variety of products / items, Available pocket money, A positive influence on my purchase, New electronic word - of - mouth marketing technique, Buy products in the near future, Varieties of information about different brands and products, Items promoted on FB. The factor loading points for these variables are significantly higher than 0.60. Hence, policymakers at different business organizations should be more apprehensive about these variables if they desire to make their FB advertisements more effective for keeping Bangladeshi youth groups satisfied about products and services promoted on facebook.

The second important factor is 'Negative aspiration of products that are advertised on FB', which explains 8.785% of the variation in the Influences of FB Ads on Bangladeshi Consumers. This factor includes Make less loyal to brands, A negative influence on buying decisions, Not increasing intention to acquire products, Not increasing purchase intention

of featured. The factor loading points for four of these variables are also higher than .60 and the negative value of these negative statements indicate the positive influences of FB Ads on Bangladeshi Consumers.

7. Conclusion

Facebook is one of the social networking sites for social interaction and has provided advertisers an eminent platform to reach their intended groups. The electronic marketplace has been created due to the advertising on Facebook where physical vicinity is no longer required for exchange to come about. Hence, advertisers should rethink for placing their advertisements on social networking sites, especially on Facebook because it has created a direct interaction and correlation between the customers and the advertisers. Many studies have exhibited that youths are the main users of Facebook as soon as the advertisements appear on Facebook. And one of the crucial things is that they use Facebook daily, even they access on Facebook a couple of times a day. Research shows that youths deliberately access on Facebook and their duration to stay there is very impressive in Bangladesh. In addition, the youth is the big population in Bangladesh. However, Facebook advertising is one of the cheapest forms of advertisement. Even 5 dollars is enough to reach 1000 people. It is too much costly to reach this number of people in other medium of communications such as radio ads, television commercials, billboards, and other traditional media. Research shows that Influences of Facebook advertisement on the buying behavior of the youth groups are positive in Bangladesh. Considering the fact, Advertisers can take an initiative to place their ads on Facebook to let their customers know about their products or services. Pointing out that the appealing, fashion-forward and impressive advertisements should be made by the advertisers so that Facebook users, particularly the youths, will not only feel like doing business with the products, but rather be a customer of the products. Businesses creating their own Facebook page and placing advertisements on there can reach their intended consumers effectively with low cost and very little time by using this approach. These findings will be more beneficial for the Bangladeshi advertisers, advertising agencies, practitioners, and marketers who are responsible to work in the concerned field in designing and placing effective advertisement on the Facebook to make their consumers more attracted to their products and services advertised on this site. Further research can be conducted for exploring the influential factors of Facebook advertisement of multi-countries consumer behavior in taking purchase decision.

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Voice Identification by Fourier Transform Using MATLAB

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Abstract

Human beings are the best creatures on earth and speaking is one of the best features of human beings. The most common and easiest way to express mind is speaking. Since information is exchanged through speech so it is a signal. People use his/ her voice to talk. Each person's voice is different, as is the manner in which each person speaks. Voice is one of the distinctive features of every human being, like finger print, tongue print, iris print etc. We can identify the speaker very easily by listening to the voice as we can distinguish between the male and the female voice by listening to the voice. Therefore, voice processing is one of the most important aspects of signal processing. In this paper we try to distinguish different types of voice and recognize the speaker by analyzing voice signal or speech signal. Speech recognition is the process in which certain words of a particular speaker will be automatically recognized based on the information included in the individual speech waves. For voice identification at first we collect some real voice samples by MATLAB program. Then we transform our time domain sample voice signal into frequency domain signal. After converting the time domain signal to frequency domain signal, we take a small window of frequency domain signal and the zoom in the window. We calculate the pitch and corresponding frequency of the frequency domain signal of the zoom in the window. Moreover, the technique applied here is to develop a code using MATLAB programming which will compare the pitch, frequency and formant vectors of a known speech signal which will then compare with the bunch of other unknown speech signals and prior to it choose the appropriate matches.

Keywords: MATLAB Programming, Fourier transforms, Speech Editing, Speech Recognition, Pitch Vector.

1. Introduction

Although voice is one of the most distinctive features of humans, we did not know how to process it formally before the twentieth century. The

formal tools of signal processing were invented in the mid-twentieth century when electronics gave us the ability to manipulate signals time varying measurements to extract or rearrange various aspects of interest to us. The core of traditional signal processing is a way of looking at the signals in terms of sinusoidal components of differing frequencies, and a set of techniques for modifying signals that are most naturally described in that domain[3]. The Fourier series and Fourier transform generally deal with the sinusoidal. Since voice signal is the most widely known, strong and characteristic signal, it is also combination of sinusoidal. In that case we choose Fourier transform to process the voice signal. At present, the importance of voice signal processing is immense. With the invention and widespread use of mobiles, telephones and other data storage devices, speech analysis are getting more important day by day. The term and the basic concept of speech identification started in the early 1960`s with exploration into voiceprint analysis which is very similar to fingerprint concept. The voice characteristic parameters of different people are almost different, such as the loudness, voice amplitude, mean frequency and others — all of them are different [2]. Speech recognition technology is a process of extracting the speech characteristic information from people's voice, operated through the computer and to recognize the content of the speech. It is inter connected to the many fields, where modern speech recognition technology works through many domains of technology, such as signal processing, theory of information, phonetics, linguistics, machine learning, artificial intelligence, etc [1][4]. Over the past few years, we have observed many researches about speech recognition technology. With the development of computer, microelectronics and digital signal processing technology, speech recognition has acted an important role at present [9]. The use of speech recognition system not only improves the efficiency of the daily life, but also makes people's life more easy, reliable and secure. People who are physically challenged such as blind and deaf can easily communicate with the machines through speech analysis. There are many ways of speech analysis of which all Fourier transform is very useful tools [8].

2. Objective

The objective of this paper is to detect the voice and recognize the speaker analyzing different voice signals by Fast Fourier Transform (FFT).

3. Methodology

3.1 MATLAB

MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and proprietary programming language developed by Math Works. MATLAB allows matrix manipulations, plotting of function and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages. Although MATLAB is intended primarily for numerical computing, an optional toolbox uses the MuPAD symbolic engine allowing access to symbolic computing abilities. An additional package, Simulink, adds graphical multi domain simulation and model based design for dynamic and embedded systems. Cleve Moler, the chairman of the computer science department at the University of New Mexico, started developing MATLAB in the late 1970s. He designed it to give his student's access to LINPACK and EISPACK without having to learn FORTRAN. It soon spread to other universities and found a strong audience within the applied mathematics community. MATLAB can call functions and subroutines written in the programming languages C or FORTRAN. A wrapper function is created allowing MATLAB data types to be passed and returned. MEX files (MATLAB executables) are the dynamically loadable object files created by compiling such functions. Since 2014 increasing two-way interfacing with Python was being added.

3.2 Fourier series

A periodic function $f(x)$ defined on the finite interval and expressed in terms of $sine$ ans $cosine$ function, the expansion is called Fourier series. There are two types of Fourier series

➢ Full range Fourier series with period $2l$.

➢ Half range Fourier series with period l.

3.3 Full range Fourier series with period $2l$

Suppose $f(x)$ be any periodic function defined in the finite interval $-l$ to l with period $2l$, then Fourier series of $f(x)$ is

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n cos\left(\frac{n\pi x}{l}\right) + \sum_{n=1}^{\infty} b_n sin\left(\frac{n\pi x}{l}\right)$$

Where a_0, a_n and b_n are called fourier coefficient (Euler formulae) and

$$a_0 = \frac{1}{l} \int_{-l}^{l} f(x)dx$$

$$a_n = \frac{1}{l} \int_{-l}^{l} f(x)cos\left(\frac{n\eth x}{l}\right)dx$$

$$b_n = \frac{1}{l} \int_{-l}^{l} f(x)sin\left(\frac{n\eth x}{l}\right)dx$$

3.4 Half range Fourier series with period$l$: There are two types of half range Fourier series

➢   Half range Fourier cosine series.

➢   Half range Fourier sine series.

Half range Fourier cosine series

Suppose $f(x)$ be any periodic function defined in the finite interval 0 to l with period l, then the Half range Fourier cosine series is

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n cos\left(\frac{n\eth x}{l}\right)$$

Where

$$a_0 = \frac{2}{l} \int_{0}^{l} f(x)dx$$

$$a_n = \frac{2}{l} \int_{0}^{l} f(x)cos\left(\frac{n\eth x}{l}\right)dx$$

Half range Fourier sine series

Suppose $f(x)$ be any periodic function defined in the finite interval 0 to l with period l, then the Half range Fourier sine series is

$$f(x) = \sum_{n=1}^{\infty} b_n sin\left(\frac{n\eth x}{l}\right)$$

Where

$$b_n = \frac{2}{l} \int_0^l f(x) \sin\left(\frac{n\eth x}{l}\right) dx$$

Fourier series is applicable only for periodic function but Fourier transform is applicable both for periodic and non-periodic function.

Fourier transform: Fourier series can be generalized to complex numbers, and further generalized to derive the Fourier Transform. The forward Fourier is defined as

$$F(k) = \int_{-\infty}^{\infty} f(x) e^{-2\eth i k x} dk$$

And the inverse Fourier transform is defined as

$$f(x) = \int_{-\infty}^{\infty} F(k) e^{2\eth i k x} dk$$

Fourier Transform maps a time series (e.g audio samples) into the series of frequencies (their amplitudes and phases) that composed the time series. Inverse Fourier Transform maps the series of frequencies (their amplitudes and phases) back into the corresponding time series. The two functions are inversed of each other.

3.5 Discrete Fourier Transform

If we wish to find the frequency spectrum of a function that we have sampled, the continuous Fourier Transform is not so useful. We need a discrete version. The forward discrete Fourier transform id is defined as

$$F_n = \sum_{k=0}^{N-1} f_k e^{\frac{-2\eth i n k}{N}}$$

And the inverse discrete Fourier transform id is defined as

$$f_k = \frac{1}{N} \sum_{k=0}^{N-1} F_n e^{\frac{-2\eth i n k}{N}}$$

Fast Fourier Transform (FFT)

Discrete Fourier Transform would normally require $O(n^2)$ time to process for $n$samples

$$F_n = \sum_{k=0}^{N-1} f_k e^{\frac{-2\eth ink}{N}}$$

Don't usually calculate it this way in practice. Fast Fourier Transform takes$O(n \log(n))$ time. Most common algorithm is the Cooley-Tukey Algorithm. In our study we use here Fast Fourier Transform [5][7][10].

3.6 Pitch

Pitch is a perceptual property of sounds that allows their ordering on a frequency related scale or more commonly, pitch is the quality that makes it possible to judge sounds as "higher" and "lower" in the sense associated with musical melodies. Pitch can be determined only in sounds that have a frequency that is clear and stable enough to distinguish from noise. Pitch is a major auditory attribute of musical tones, along with duration, loudness, and timbre. Pitch may be quantified as a frequency, but pitch is not a purely objective physical property; it is a subjective psycho acoustical attribute of sound. Historically, the study of pitch and pitch perception has been a central problem in psychoacoustics, and has been instrumental in forming and testing theories of sound representation, processing, and perception in the auditory system [11].

4. Experimental Samples

Let us take some real voice of male and female persons. In our study we took fourteen voices of seven people here. We collected our voice sample randomly from three women and four men also we got two voices from each person.

The 1st experimental real voice of a person who speaks by a microphone and says hello for 5 seconds
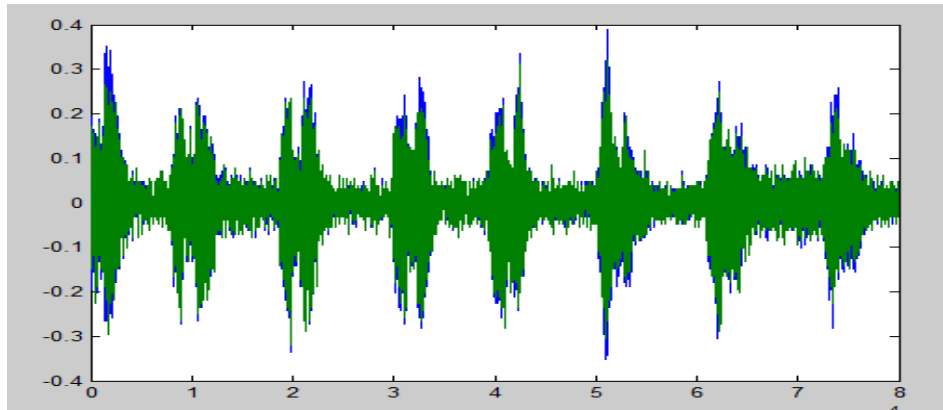
X axis→ time (ms), Y axis→ amplitude

Figure 1.1: 1st experimental Real voice.
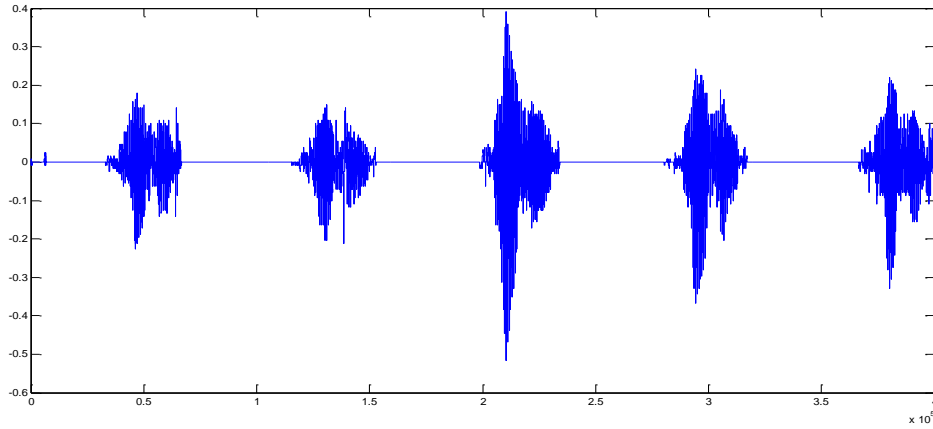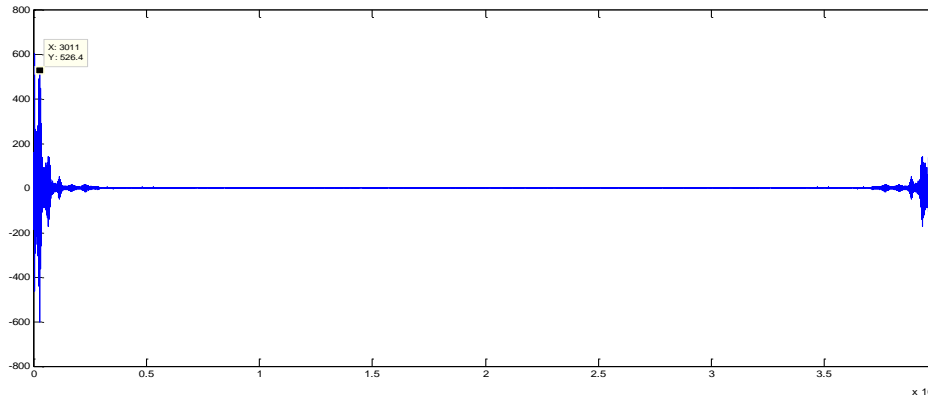
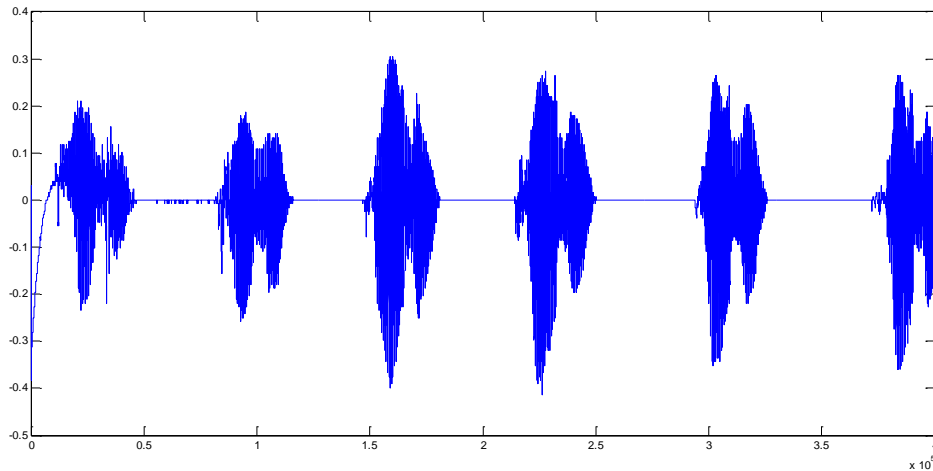The Fast Fourier Transform of the voice is
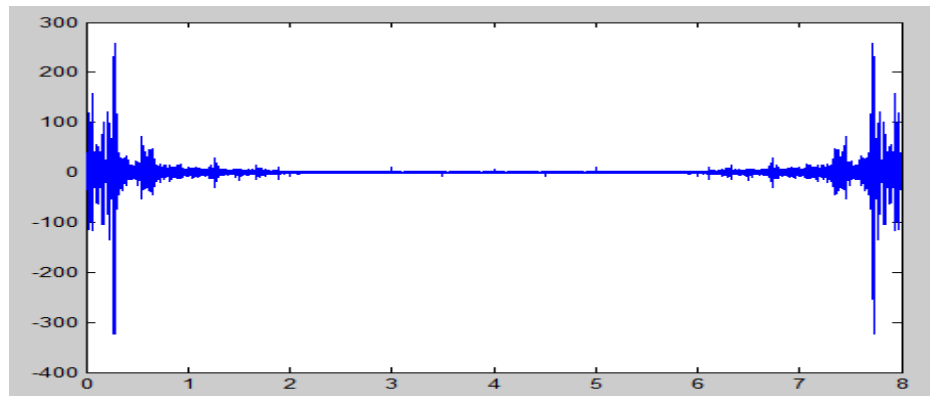
X axis→frequency, Y axis→amplitude

Figure 1.2: FFT of first experimental Real voice shown in fig1.1

We know that FFT is symmetric about the origin. The last value of the FFT represents the highest frequency component. The highest frequency component is nothing but the sampling frequency. Generally human voice frequencies very form 300 Hz to 3.3 KHz. The average male frequency is 300-500 Hz and female frequency range is 500-800 Hz which is little bit higher than male frequency. In our present study we take 80000 samples. Every five sample represent 1 Hz. So every sample represents 0.2 Hz. Now we calculate the frequency of each last value of voice signal from FFT graph.
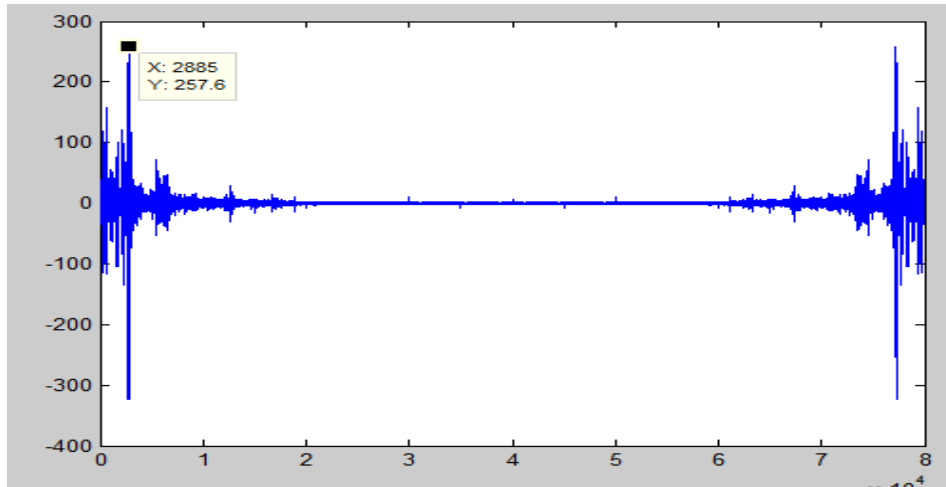
X axis→ frequency, Y axis→ amplitude

Figure 1.3: The last value of the FFT represents the highest frequency component

Here the last value of FFT is 2885

And the corresponding frequency is 577 Hz

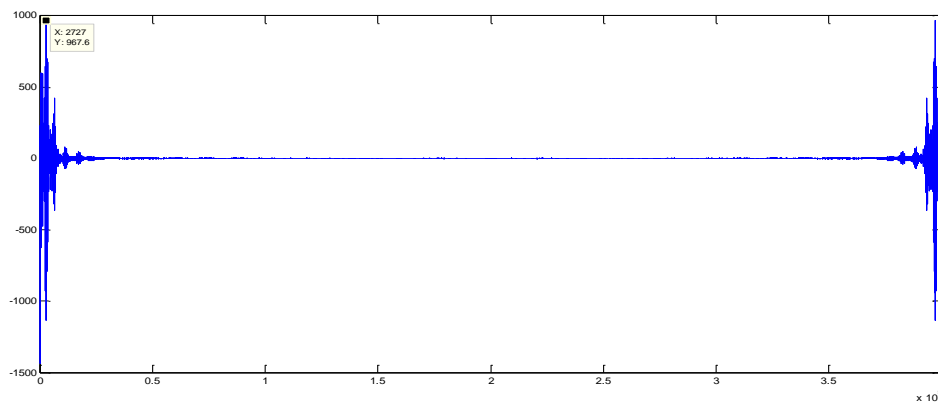The 2nd experimental Real voice of a person who speaks by a microphone and says hello for 5 seconds
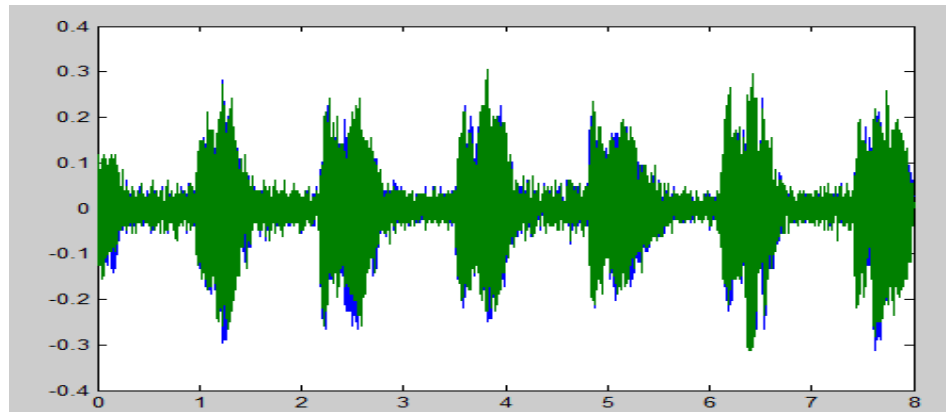
X axis→ time (ms), Y axis→ amplitude

Figure 1.4: 2nd experimental Real voice
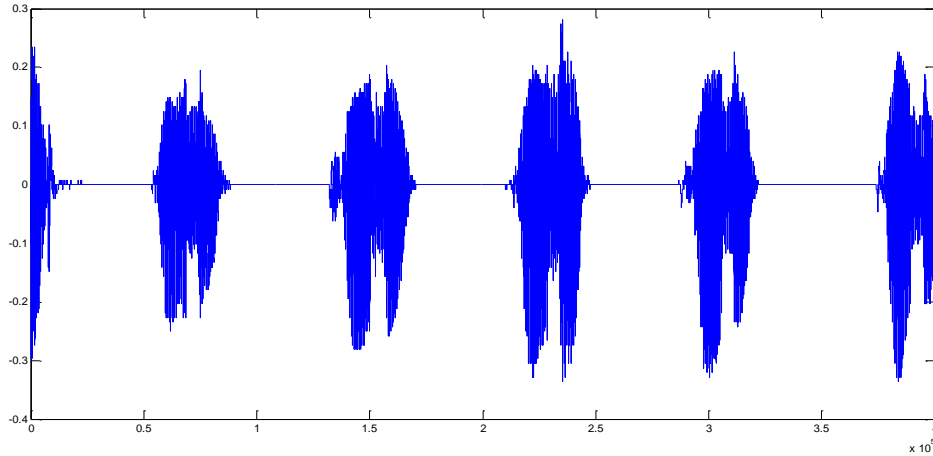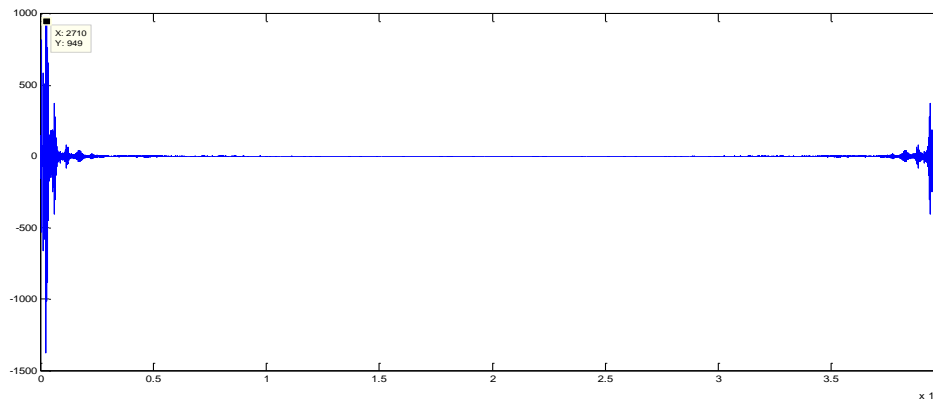
The Fast Fourier Transform of the voice is
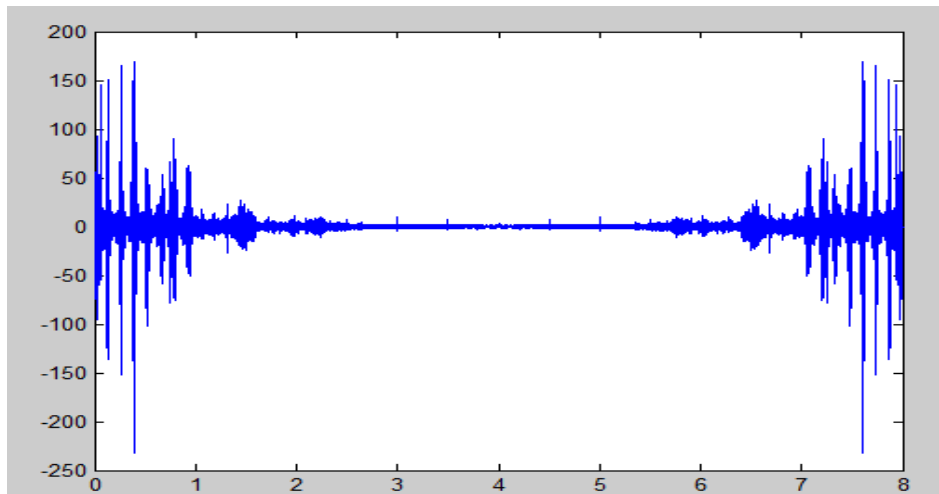
X axis→ frequency, Y axis→ amplitude

Figure 1.5: FFT of 2nd experimental Real voice shown in fig1.4

The last value of the FFT represents the highest frequency component
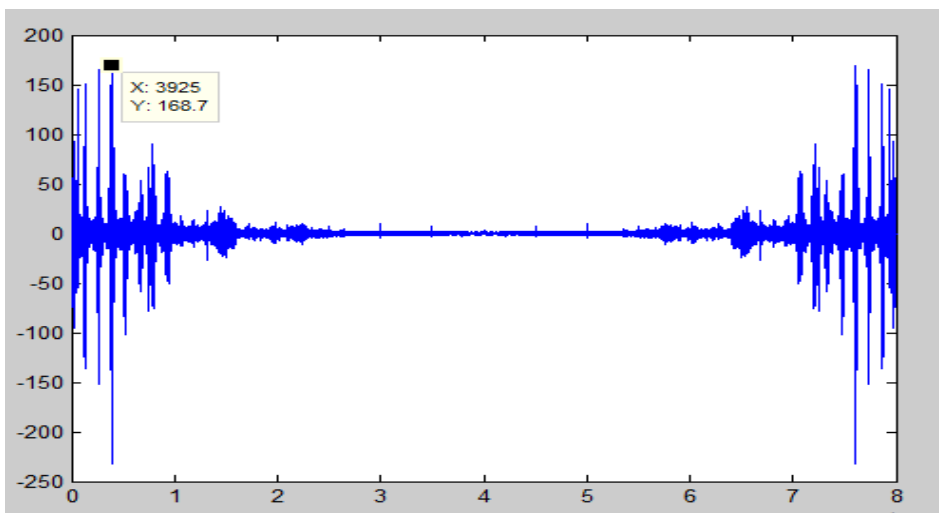
X axis→ frequency, Y axis→ amplitude

Figure 1.6: The last value of the FFT

Here the last value of FFT is 3925

And the corresponding frequency is 785 Hz

The 3rd experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds
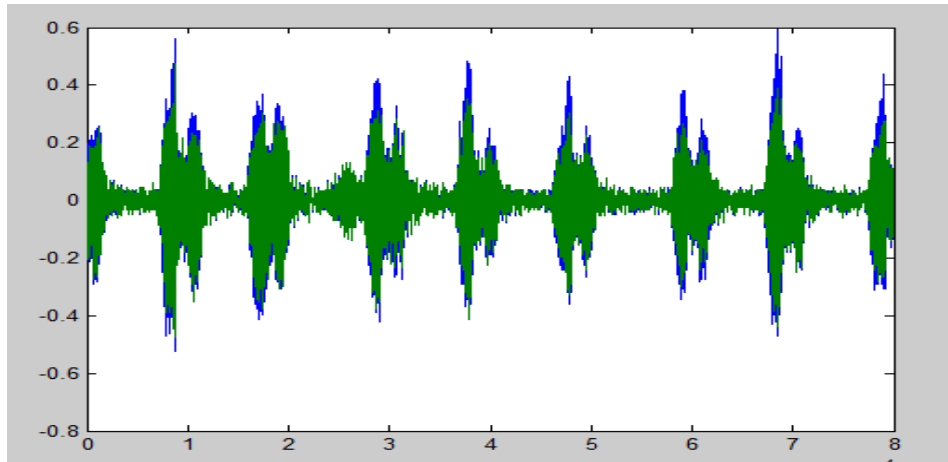
X axis→ time (ms), Y axis→ amplitude

Figure 1.7: 3rd experimental Real voice

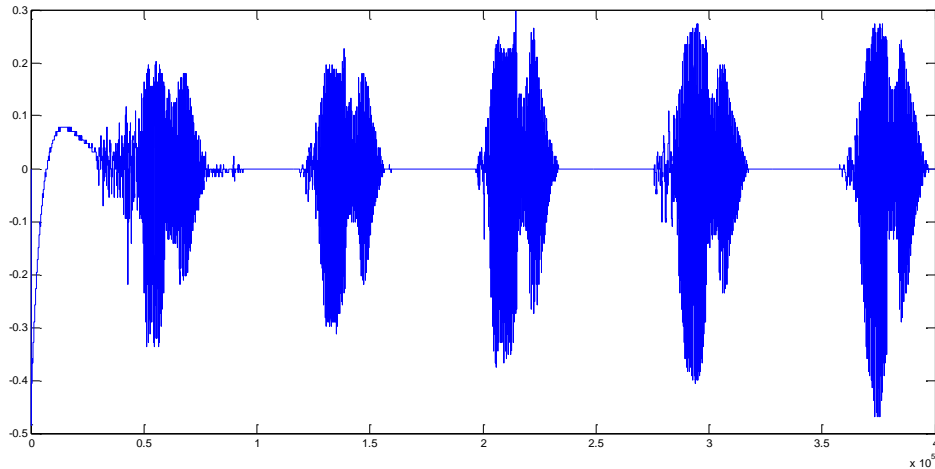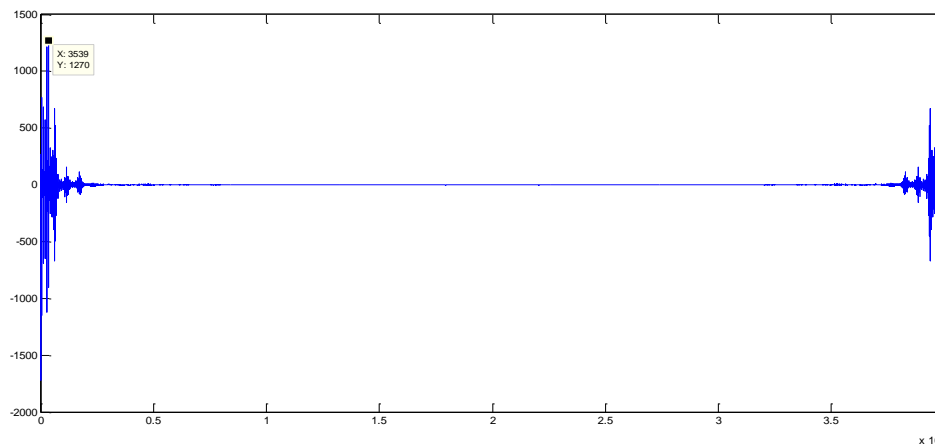The Fast Fourier Transform of the voice and the last value of the FFT
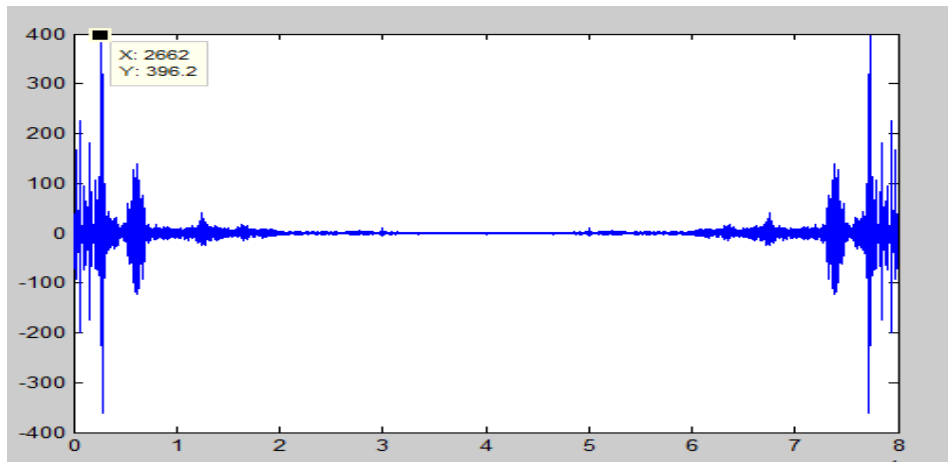
X axis→ frequency, Y axis→ amplitude

Figure 1.8: The last value of the FFT of third experimental Real voice shown in fig 1.7

Here the last value of FFT is 2662

And the corresponding frequency is 532 Hz

The 4th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds
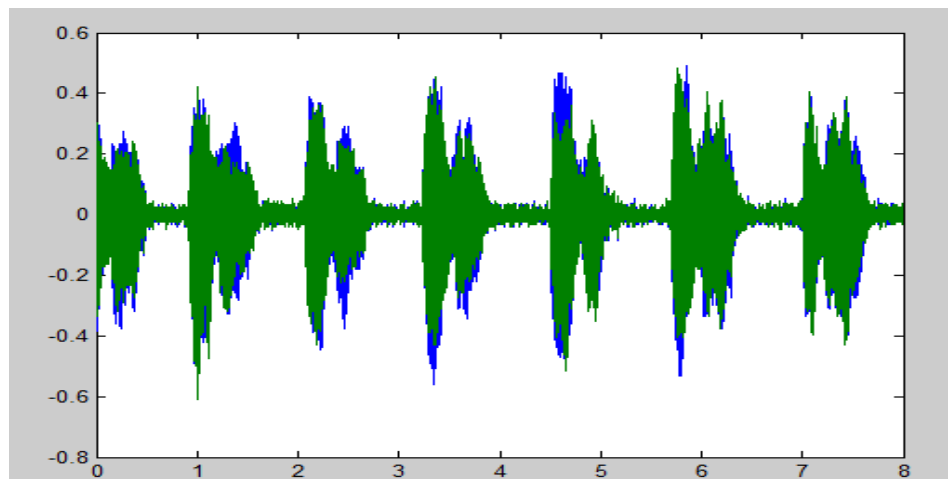
X axis→ time (ms), Y axis→ amplitude

Figure 1.9: 4th experimental Real voice

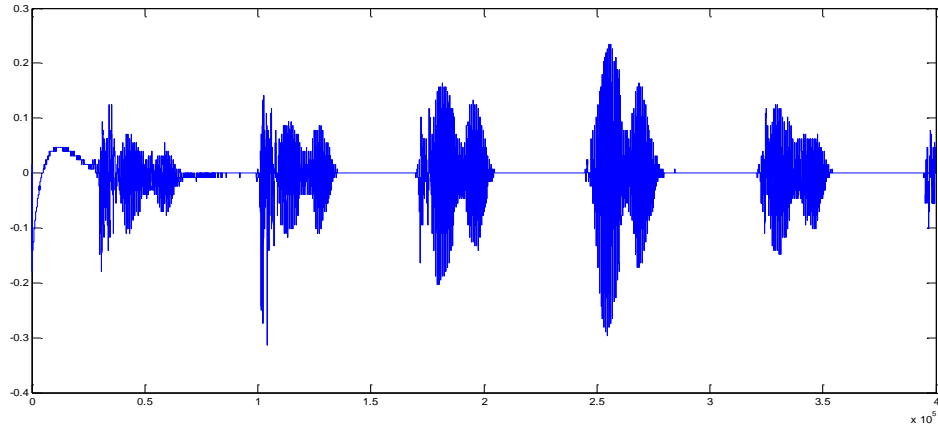The Fast Fourier Transform of the voice and the last value of the FFT
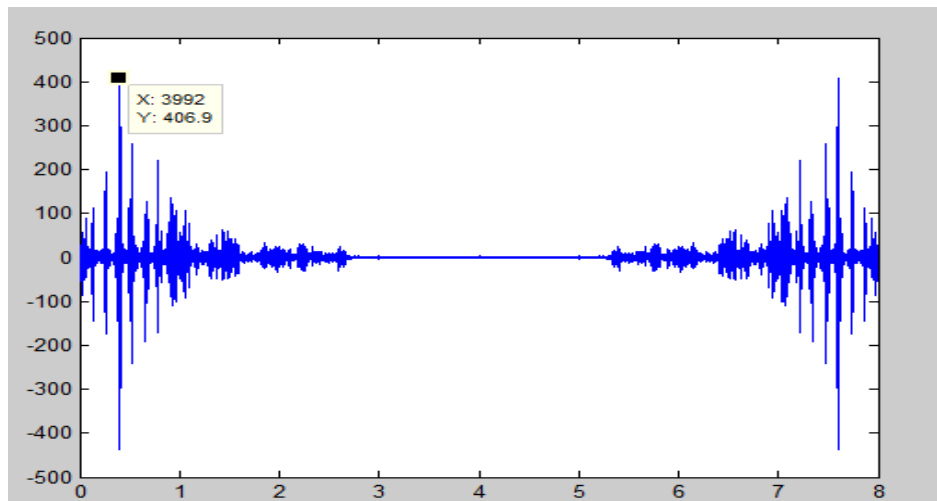
X axis→ frequency, Y axis→ amplitude

Figure 1.10: The last value of the FFT of third experimental Real voice shown in fig 1.9

Here the last value of FFT is 3992
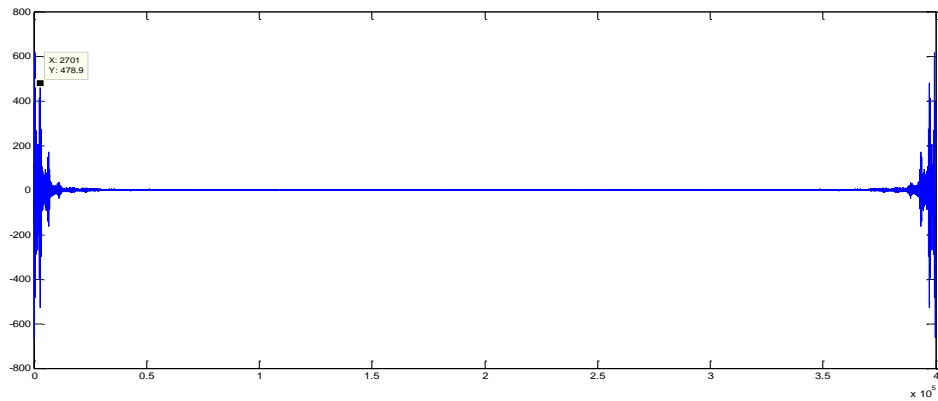
And the corresponding frequency is 798 Hz

The 5th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.11: 5th experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.12: The last value of the FFT of third experimental Real voice shown in fig 1.11

Here the last value of FFT is 3011

And the corresponding frequency is 602 Hz

The 6th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.13: 6th experimental Real voice

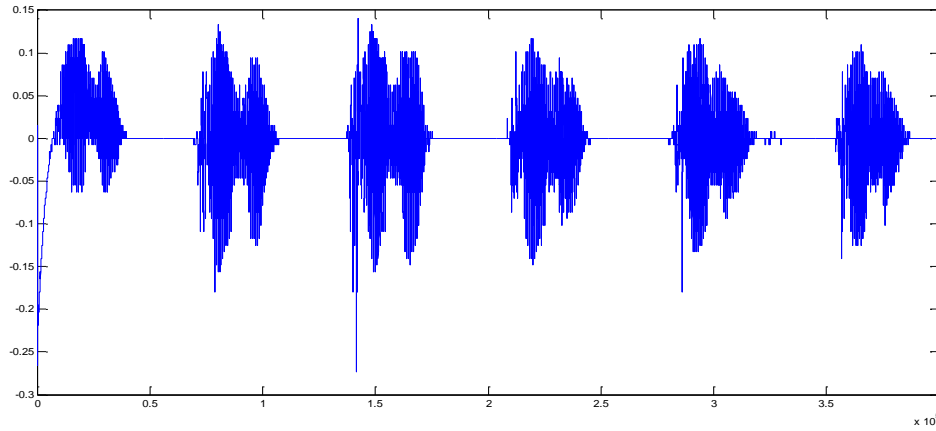The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.14: The last value of the FFT of third experimental Real voice shown in fig 1.13

Here the last value of FFT is 2727
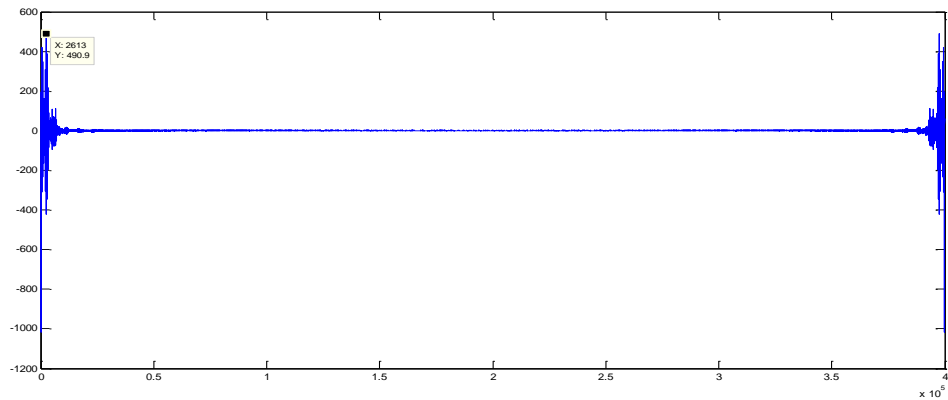
And the corresponding frequency is 545 Hz

The 7th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.15: 7th experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.16: The last value of the FFT of third experimental Real voice shown in fig 1.15

Here the last value of FFT is 2710

And the corresponding frequency is 542 Hz

The 8th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.17: 8th experimental Real voice

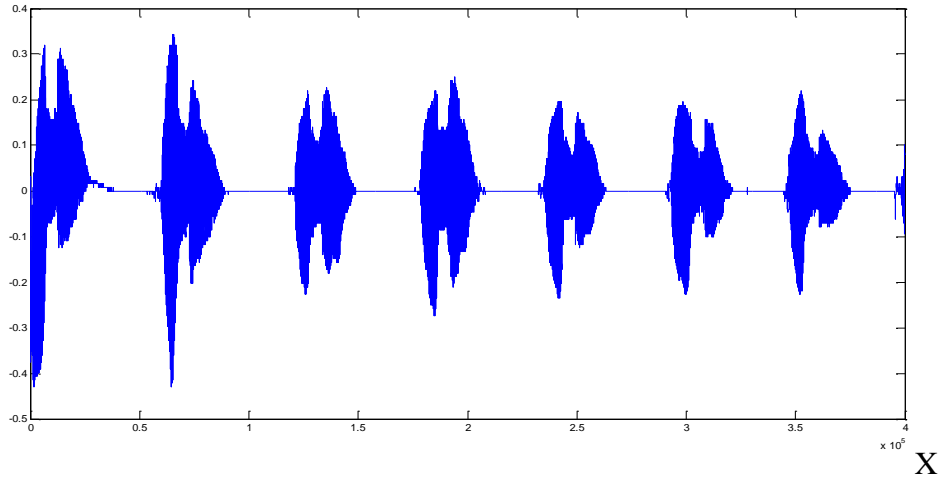The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.18: The last value of the FFT of third experimental Real voice shown in fig 1.17

Here the last value of FFT is 3539

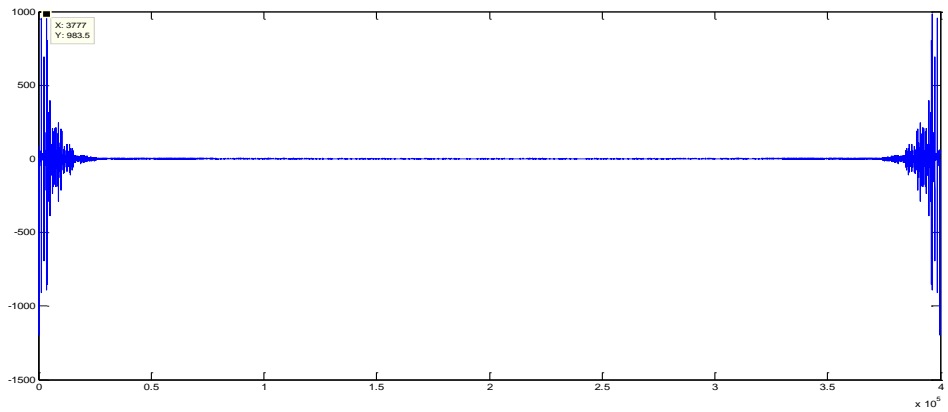And the corresponding frequency is 707 Hz

The 9th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.19: 9th experimental Real voice

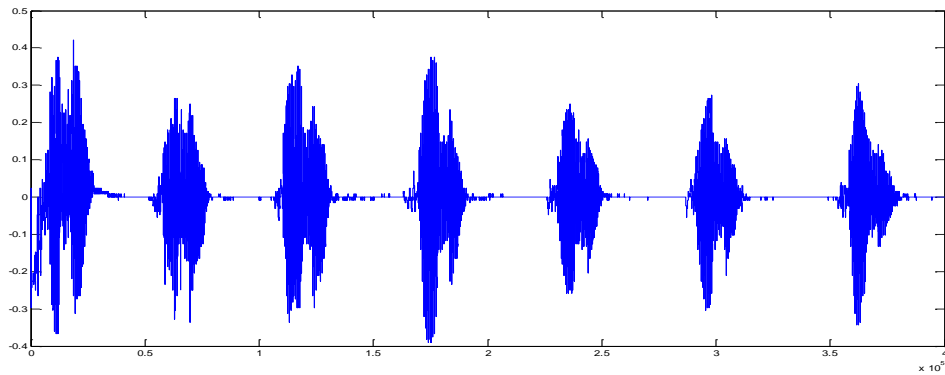The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.20: The last value of the FFT of third experimental Real voice shown in fig 1.19

Here the last value of FFT is 2701
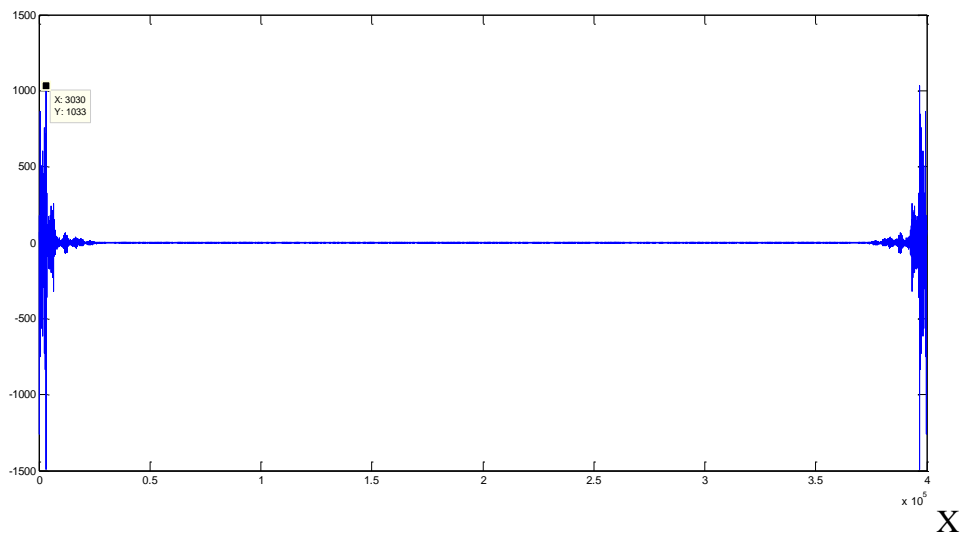
And the corresponding frequency is 540 Hz

The 10th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.21: 10th experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.22: The last value of the FFT of third experimental Real voice shown in fig 1.21

Here the last value of FFT is 2613

And the corresponding frequency is 522 Hz

The 11th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

axis→ time (ms), Y axis→ amplitude

Figure 1.23: 11ᵗʰ experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT
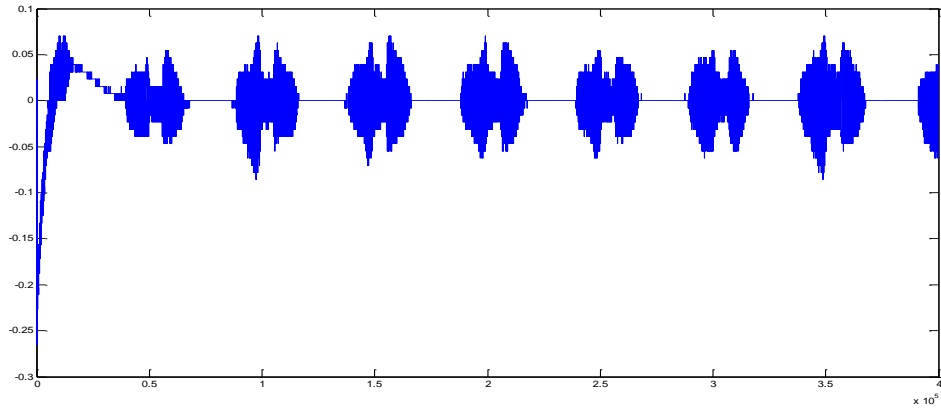

X axis→ frequency, Y axis→ amplitude

Figure 1.24: The last value of the FFT of third experimental Real voice shown in fig 1.23

Here the last value of FFT is 3777

And the corresponding frequency is 755 Hz

The 12ᵗʰ experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.25: 12th experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.26: The last value of the FFT of third experimental Real voice shown in fig 1.25

Here the last value of FFT is 1500
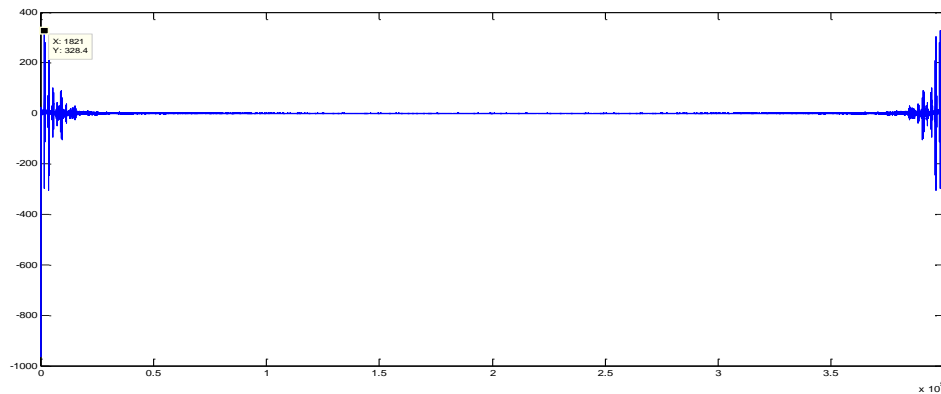
And the corresponding frequency is 300 Hz

The 13th experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds

X axis→ time (ms), Y axis→ amplitude

Figure 1.27: 13ᵗʰ experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT
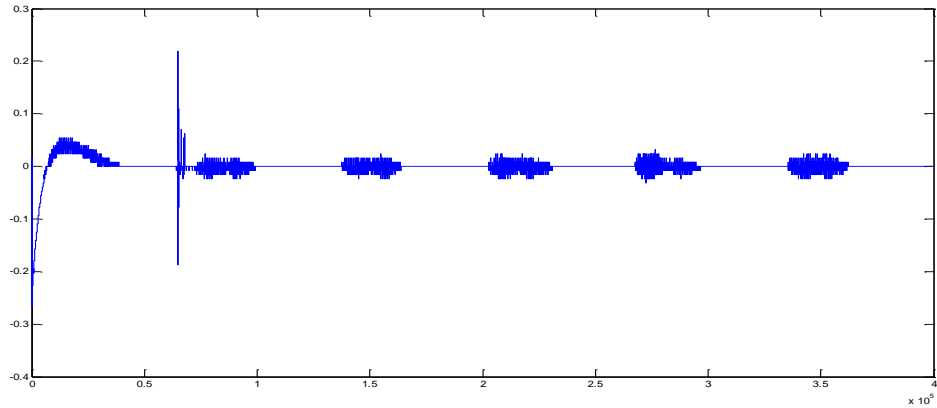

X axis→ frequency, Y axis→ amplitude

Figure 1.28: The last value of the FFT of third experimental Real voice shown in fig 1.27

Here the last value of FFT is 1821

And the corresponding frequency is 364 Hz

The 14ᵗʰ experimental Real voice of a person who speaks by a micro phone and says hello for 5 seconds
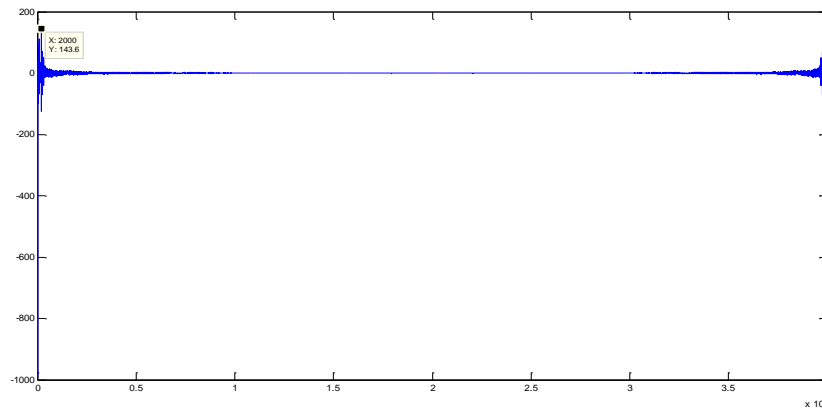
X axis→ time (ms), Y axis→ amplitude

Figure 1.29: 14th experimental Real voice

The Fast Fourier Transform of the voice and the last value of the FFT

X axis→ frequency, Y axis→ amplitude

Figure 1.30: The last value of the FFT of third experimental Real voice shown in fig 1.29

Here the last value of FFT is 2000

And the corresponding frequency is 400 Hz

5. Results and Discussions

In the above experimental study, we tried to calculate the approximate frequency of each voice by analyzing FFT. We know that the frequency of

female voices is higher than the frequency of male voices. In the case of FFT we see exactly the same thing. By extracting the frequency with the help of FFT of each of the fourteen voices above, we see that for the same amplitude the frequency of the female voices are almost higher than the frequency of male voices. We have also seen the frequency of different voices of the same woman and man is approximately the same. From the above we see that among fourteen voices, the frequency of six voices varies from 600(Hz) to 800(Hz) and the frequency of eight voices varies from 300 Hz to 600 Hz since we have taken three female's and four male's experimental voices. Also from the table (Shown in Figure1.31) it can be seen that the voices 1st, 3rd, 6st, 7st, 9st, 10st, 13st, 14st have a frequency between 300 Hz to 600 Hz and the voices 2nd, 4st, 5st, 8st, 11st, 12st voices have a frequency between 600 Hz to 800 Hz that were randomly taken so they are from male and female respectively. Also 1st voice and 3rd voice, 2nd voice and 4th voice, 5th voice and 12th voice, 6th voice and 7th voice, 8th voice and 11th voice, 9th voice and 10th voice, 13th voice and 14th voice are almost equal to the frequency so they are the same human voice (Shown in Figure1.32).

Frequency data chart:

| Voice	Value of FFT	Frequency Hz	Person
1st voice	2885	577	Male(1)
2nd voice	3925	785	Female(1)
3rd voice	2662	532	Male(1)
4th voice	3992	789	Female(1)
5th voice	3011	602	Female(2)
6th voice	2727	545	Male(2)
7th voice	2710	542	Male(2)
8th voice	3539	707	Female(3)
9th voice	2701	540	Male(3)
10th voice	2613	522	Male(3)
11th voice	3777	755	Female(3)
12th voice	3030	606	Female(2)
13th voice	1821	364	Male(4)
14th voice	2000	400	Male(4)

Figure1.31: Frequency table
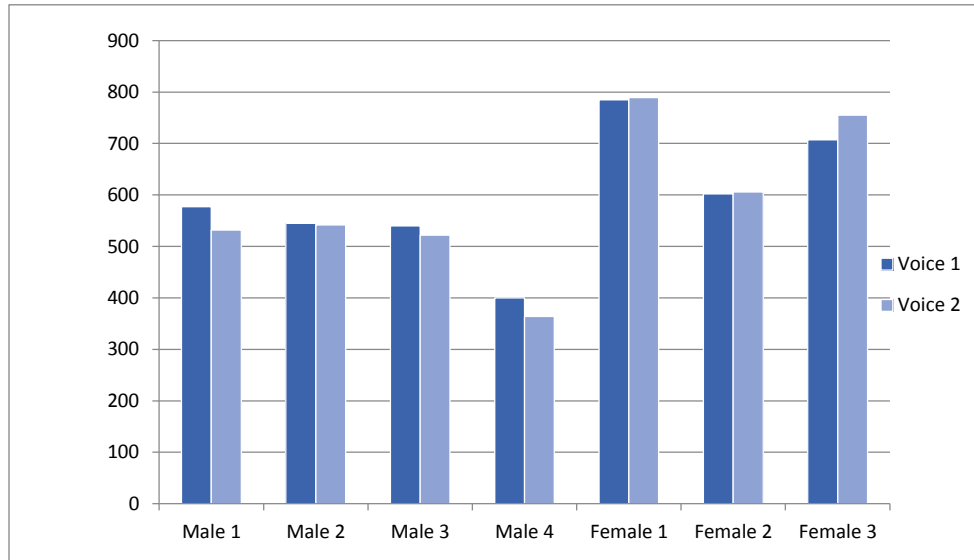
Figure1.32: Frequency compare diagram

6. Conclusion

This paper has summarized the very basic feature of voice signal. The objective of this paper is to detect voice and recognize the speaker analyzing different voice signals by Fast Fourier Transform (FFT). FFTs are frequently used in a number on applications including speech recognition, frequency analysis, image analysis, image recognition etc. It is observed that the frequency that we get from FFT gives more accurate result to detect the speaker by analysing voice signal. By this study we can easily distinguish between the male voice and female voice as well as identify the specific speaker. This will brings a lot of success to large sectors like machine learning, robotics, data mining, big data, intelligence division, forensic department, voice biometric etc. With the help of voice biometric, forensic and voice identification process, our intelligence department will be able to identify many criminals, as a result our cybercrime will greatly reduce. Nowadays voice automation is very popular and widely used medium. Already many things are being done through voice commands and in the near future this sector will be spread. Voice security is very popular among many trusted security media. Therefore, in the present world, voice identification, specification and speaker recognition is a very important task. In this paper we have generated codes with the help of MATLAB Programming and recorded

our sound by regular headphone; so some noise may be mixed with the original voice. We will try to improve this issue in future.

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Ethical Orientation and Behavior of BUBT Engineering Students

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Abstract

As students are future leaders, professionals, teachers, and their ethical development is essential to ensure the overall development. Different components influence ethics and behavior, and here 351 engineering students of BUBT were asked to respond to the presented scenarios. Based on those answers their decision making patterns have been identified. Behavioral intention is molded through attitude, subjective norm and behavior control (Theory of Planned Behavior). Results show the significance of them in behavioral intention. Supportiveness, rightness, and control have come up with a coefficient of 0.303, 0.218 and -0.104 consecutively. So, the control discourages a specificbehavioralintention whereas rightness and supportiveness increase the probability of the action. Behavioralintention and behavior have shown a strong and positive correlation of 0.89. This study has presented the ethical decision-making process of BUBT engineering students (how the ethical intentions and final decisions are made).

Keywords: Ethical dilemma, Theory of Planned Behavior, Attitude, Behavioral Intention, Behavior

1. Introduction

The term "ethics" has been used to refer to the rules and principles of right and wrong conduct (Gbadamosi, 2004). This aspect of human psychology is defined as the moral principle of a person towards any activity. In society, people need to choose among some alternative actions which are determined by personal ethics. People tend to make the most beneficence action for their own and others around. This election and selection process is known as decision-making. Personal values have a significant influence on decision-making (e.g., Rokeach, 1973). It is believed that an individual's values impact him or her to behave ethically or unethically (Baird & Zelin, 2007). An ethical decision is a decision which is both legal and morally acceptable to the large group of people (M. Jones,

1991). Ethical decision-making is mostly based on essential personality standards like beliefs, trustworthiness, morality, respect, responsibility, fairness, caring, and good citizenship. Ethical decisions involve responding to socio-technical problems where multiple, often competing; concerns are operating (Werhane, 2002). Thus, decision-making involving ethical issues can be viewed as solving complex and ill-defined problems (Frederiksen & Ward, 1978). Ethical decision-making phenomenon and the complex mechanism of choosing among alternatives, known as ethical orientation, can be defined as the approach that an individual takes to makean ethical judgment by using ethical perceptions and sensitivity along with the ability to distinguish the ethical nature of a situation (Clikeman et al., 2001). It includes idealism and relativism.Being social, there is always some influence of the group in which the person belongs along with some individual thoughts explicit or implicit. This fact creates a variance of preferences within individuals in ethical orientation. Ethical-decision making components create an intention to perform the action which seems to be beneficial for the individual or the community (Elango et al., 2010). This is known as an ethical intention. An ethical intention represents the ethical orientation of that person. However, it is not always easy to act ethically, although it is the right thing to do. A decision being right at some point in time might seem wrong at some other point in time. The impact can also change with the scenario. In many situations, some decisions have to be taken to choose between competing for ethical values and practices.

In most cases, ethical decisions generate ethical behaviors that provide a foundation for good practices in everyday life (K. Stenmark et al., 2010). This means that the ethical intention and behavioris not the same. With the impact of internal and external factors, the perception may change and so do the behavior. It is an abstract phenomenon. So, the proper approach should be developed to find out person's ethical orientation, intention, andbehavior.

Student life is the golden period for any person to understand, learn and develop anything. There are some phenomena which are very common for students yet ethically challenging. Their decision, selection and approach towards that decision represent their thought process. This can easily represent how they analyze a situation and take a decision. Students are the future citizens and their ethics will determine the future ethics of a society. This makes it even necessary to have an idea about the existingethical orientation of students. The current study is going to deal

with the ethical aspects of students. It has dealt with the facts how students think, make ethical intentions and if they behave as they intended or not.

2. Purpose of the Study

The primary purpose of the study is to identify the ethical aspects of university-level current students. The current study has been conducted on engineering students of BUBT. There are some questions on the ethics of engineering professionals, and sadly there are very few ethics-related topics involved in the curriculum of BUBT engineering faculty. This study has investigated how the ethics of BUBT engineering students are oriented, how they make ethical intentions and if they behave according to their intention or not. These things will serve the purpose of understanding the ethical standing of BUBT engineering student and whether or not it is required to include more ethics related topics in the engineering curriculum.

3. Objectives of the Study

The primary objectives of this study are:

- To know the ethical decision making dimensions of engineering students of BUBT.

- To identify factors that govern the decision-making process.

- To understand the ethical orientation of engineering students.

- To analyze whether ethical orientation governs the behavior of a student or not.

- To analyze the necessity of ethics-related topics in the curriculum of BUBT engineering faculty.

4. Literature Review

Empirical studies present different viewpoints of ethics. Three definitions are central to the studies. First, an ethical issue is present where a person's actions, when freely performed, may harm or benefit others (Velasquez & Rostankowsh, 1985). Second, a *moral agent* is the person who makes an ethical decision, without recognizing the moral issues. Third, an ethical decision is a decision which is both legal and morally acceptable to the large group of people. This follows from Kelmanand Hamilton's (1989) definition of crimes of obedience. The term "ethics" has been used to refer to the rules and principles of right and wrong conduct (Gbadamosi, 2004).

Ethical issues are prevalent in society today in every aspect of human life. Personal values, although individualistic, are primarily influenced by societal and cultural factors and tend to vary across nations (Lan et al., 2009). Personal values influence an individual's behavior and attitude, this can change with the values of surroundings like colleagues or organizations within which they work (e.g., Lan et al., 2009).Ethical reasoning is a cognitive operation related to a citizen concerned with right and wrong, and the rules and laws (Coleman, 2006). Ethical decisions are acceptable to a more extensive community because of having legal and moral components (Jones, 1991). Ethical decisions are correlated or profoundly influenced by personal values that characterize the decision-makers. (e.g., Wright et al., 1997; Douglas & Schwartz, 1999). Prior studies have examined individuals' ethical perceptions and personal values by Barnett & Karson, 1987; O'Fallon & Butterfield, 2005. Some factors influence ethical or unethical actions of individuals in different situations (Beu et al., 2003). Personal values help to identify whether a specific mode of conduct or end-state of existence is preferable to a different or opposite mode of behavior or end-state of subsistence (Rokeach's, 1973). The study showed the linkage between values and behavior (Cheng & Fleischmann, 2010). Researchers (e.g., Hofstede, 1980; Brathwaite & Law, 1985) have put questions on the subjective nature of rational-theoretical standings in the identification of the items of values on accounting and non-accounting students (e.g., Baker, 1976).

Ferrell et al., 1989 developed a five-stage synthesis model considering awareness, cognition, moral evaluations, determination, and actions to identify ethical aspects and evaluations. Brommer et al., 1987 claimed a model of ethical decision making which distills to a catalog of factors. Ferrell and Gresham (1985) found out that proper ethical conductis more likely to change as the issue changes. Feldman (1994) developed a framework to study students college outcomes for a long timeand identified two factors which affect output: inputs (a student's pre-college characteristics and experiences) and environments (a student's experiences within his or her institution's specific environment). Terenzini and Reason (2005) analyzed the model to broaden the scope and demonstrate its utility to address a variety of college outcomes. These outcomes include a variety of areas like academic competence (Reason et al. , 2006) and social and personal competence (Reason, Terenzini, Domingo, 2007). Also, the ability to interact with various others (Reason, Cox, Quaye, & Terenzini, 2010); and persistence (Braxton, 2009) are covered as well. Other areas namely a sense of community and retention of first-year STEM students

(Falls, 2009); and the spiritual development of first-year students (Lovik, 2011) were analyzed using the same approach. The effects of part-time faculty on first-year students (Eagen M.K., Jaeger, 2008; Jaeger A. J., Hinz, 2008); and theological development in seminary students (Lincoln, 2009) is of no difference.

Rest (1986) developed afour-component model for individual ethical decision making and behavior, i.e. (1) recognizing the moral issue, (2) making a moral judgment, (3) resolving to place moral concerns ahead of other concerns, and (4) acting on the moral Concerns.Studies were done in the context of this model. Kolberg (1976) and Rest (1979, 1986) developed a model with Component 2 which is termed as moral *development*, or the relationship between Components 2 and 4, moral development and action. Trevino (1986) offered a competing model, which implicitly builds Rest's model. It begins with the existence of an ethical dilemma and Proceeds to a cognitions stage considering individual and situational factors. Dubinsky and Loken (1989) presented an ethical decision-making model based onthe theory of reasoned action (Fishbein & Ajzen, 1975). Their model begins with behavioral beliefs, outcome evaluations, normative beliefs, and motivation. By Theory of Planned Behavior, Beck and Ajzen surmised that prior and future behaviors correlated to the underlying factors, such as attitudes, subjective norms, perceptions ofbehavioralcontrol and intentions. A study of Bairaktarova and Woodcock (2016) describes a model that correlates with ethical awareness which leads to ethical orientation and finally to the ethical behavior using the theory of planned behavior. Their model allowed educators to build confidence and trust in their students' ability to construct a professional identity for the engineering profession and practice.

Rest (1986) developed the Defining Issues Test (DIT) to measure moral reasoning with five assumed moral dilemmas. He developed a motivational model where the moral behavior is intricate and requires four different psychological processes. They are moral sensitivity (to interpret the situation and recognize a moral issue), moral judgment (to judge morally right or wrong ethical action), moral motivation (to prioritize moral values relative to other values and to establish moral intent), and moral character and implementation (to have the courage, persistence, overcome distractions, implementation skill). The goal of engineering ethics education is to teach and assess the full spectrum of Rest's model to encourage and empower ethical behavior. It is not expansive to teach

professional ethics or to motivate students to take professional ethics seriously (Bairaktarova and Woodcock 2014). Earlier much empirical research shows that the ethics education of engineering students is not sufficient. For example, early studies do not prove improvement is ethical decision making betweenfirst-year students and a senior year students (Shuman et al. 2004), meaning the curriculum is of no use in the case or ethical development (Shuman et al. 2004; McGinn 2003).

Ajzen's (1985) theory of planned behavior can be applied as a theoretical framework to understand and predict ethics of engineering pedagogy. Cheng and Tang (2006), with a focus on college students, bring up another important issue with regards to ethics. If one engages in unethical behavior during young adulthood, will they continue to engage in unethical behavior at a later age? Hollon and Ulrich (1979) find that students have lower personal ethics than the executives. Miesing and Preble (1985) conclude that older and experienced people appear to be more ethical than students.

Ahmed et al. (2003) concluded that students having an idealistic attitude towards social responsibility and ethics could perceive the ethical problems in a more facile way than others. However, Curren and Harich (1996) find that a student's discipline of study does not matter in ethical judgments. Ludlum and Moskalionov (2003) note that students specialized in business do not differ significantly from the non-business majors on ethical issues. Reiss and Mitra (1998) also argue that the choice of majors has a little influence on workplace behavior. Besides, Abdul Mohammadi et al. (1997) found that there is no significant difference between the business students and the non-business students in moral cognition.

Shurden et al., 2010 conclude that perceptions of ethics by students change over time. Thus, the introduction of ethical courses in education positively shapes students ethical conducts. On the contrary, O'Clock and Okleshen (1993) note that "ethics is personal," and it mainly rests on the individualized set of ethical standards. Ludlum et al. (2013) note that ethics is not a uniform concept except at the extreme level like everyone condemn murder. Mintz (1997) notes that the introduction of a course on ethics in business education helps managers' to take an ethical decision. Likewise, Coutu (2006) states that business students are likely to be more familiar with business ethics than the non-business students. McCabe (1996) found that 82% of engineering students self-reported cheating.

5. Theoretical Framework

5.1 Theory of Planned Behavior

Ajzen and Fishbein's, (1975) developed a theoretical framework for understanding and predicting ethics in engineering and for informing engineering ethics pedagogy.Reasoned Action Theory would provide a context for Examining attitudes and behaviorduring an ethical dilemma. The Theory was created with the intent of improving the ability to predict human behavior.The Theory of Planned Behavior (See Figure 1) suggests that a person's behavior is determined by the intentions to perform a behavior and that this intention is, in turn, a function of the attitude toward the behavior and the subjective norm(Taylor, 2001). The best predictor of behavior is the intention. The intention is the representation of a person's readiness to perform a given behavior.

Three things determined intention: their attitude toward the specific behavior, subjective norm and perceived behavioral control. Intention determines whether the person will perform a behavior and is formed by the attitudes and subjective norms. Theory of planned behavior holds that only specific attitudes towards the behavior question can be expected to predict the behavior. Attitudes can be made up of the beliefs that a person accumulates over one's lifetime. These beliefs may be generated by direct, or outside experiences one gathers over time. These experiences can also be described as an individual's positive and negative feelings about performing the behavior. One's attitude towards laws or rules prohibiting behavior may also impact one's behavior. All of these beliefs does not necessarily influence attitude. Salient beliefs are beliefs that work towards influencing one's attitude. Ajzen & Fishbein (1975) considers these to be "immediate determinants of a person's attitude." A person's attitude is ones salient belief about whether the actions will be positive or negative. Also, not only must we examine attitudes towards the behavior but also measure people's subjective norms.

The subjective norm is made up of persons' beliefs about how people care about will view the behavior.Knowing one's beliefs and attitudes are equally important in determining their intentions. Perceived behavioral control influences one's intentions. This perceived control refers to people's perceptions of their ability to perform a given behavior. This consists of the perceptions of family and friends and how one's behavior will reflect on their relationship. Theory of Reasoned Action shows that if a person intends to do the behavior, then it is probable that the person will

behave accordingly.When examining the Theory of Planned Behavior, the limitations of this theory must be addressed as well. Three main limitations of the theory are self-reporting, conscious control, and correspondence. By using this theory no direct observations will be made, only self-reported information would be used. This can be very subjective but not necessarily is always accurate. The data collected can also vary with one's attitude at the time of data collection. A subject with a more positive attitude may report more positive attitudes then they pose and vice versa concerning negative attitudes at the time the data was collected. Second, the Theory of Planned Behavior stems from the assumption that behavior is under volitional control. This only applies to behaviors one consciously elects to participate in, not actions done under continual conscious processing. Irrational decisions, habitual actions or any behavior that is not consciously considered cannot be explained by this theory (Taylor, 1995).Third, it has been recognized by Ajzen and Fishbein that the theory is also limited by what they consider to be correspondence. For the theory to predict behavior, attitude and intention must agree on action, target, context and time or it is unable to predict specific behaviors. In this study, the relationship between attitudes, behaviors are of specific interest. However,their model does provide a context for examining attitudes and behavior.

Empirical study proves that ethical orientation is based on attitude towards the behavior (rightness or wrongness), subjective norm (supportiveness or non-supportiveness) and behavior control (controllable or non-controllable). These three predictors built ethical intentions. Afterward, a person behaves based on the intention they make. This approach was developed by Ajzen in 1985 and is used in this research.
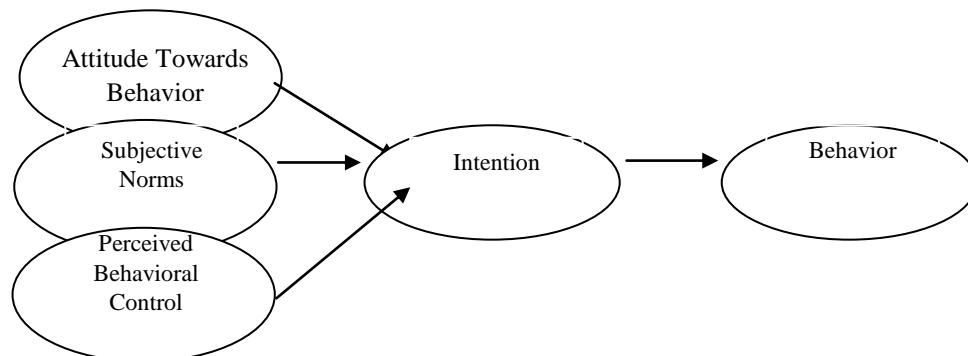
Figure 3.1: Research Model (Ajzen 1985)

The research hypotheses are:

Hypothesis 1:

Null Hypothesis H_0: There is no significant relationship between attitude towards behavior and intention.

Alternative Hypothesis H_1: There is a significant relationship between attitude towards behavior and intention.

Hypothesis 2:

Null Hypothesis H_0: There is no significant relationship between supportiveness of behavior and intention.

Alternative Hypothesis H_1: There is a significant relationship between supportiveness of behavior and intention.

Hypothesis 3:

Null Hypothesis H_0: There is no significant relationship between controllability of behavior and intention.

Alternative Hypothesis H_1: There is no significant relationship between controllability of behavior and intention.

Hypothesis 4:

Null Hypothesis H_0: There is no significant relationship between intention and actual behavior.

Alternative Hypothesis H_1: There is no significant relationship between intention and actual behavior.

6. Research Design

6.1 Sampling Design

This research has been conducted through a process of collecting surveys from January to March 2018. The survey instrument consists of 5 scenarios with five questions each and has been administered to Engineering classes at the University of Business & Technology (BUBT); Permanent campus. Random sampling technique was followed.Students were advised before taking the survey that their answers would be kept confidential, and all students were able to opt out of the survey at any time without penalty. The respondents were given approximately thirty minutes to complete the survey. At BUBT there are three departments of Engineering. In that respect, the students of those three departments, i.e.,

CSE, EEE, and Textile Engineering are the respondents of the study. The respondents are varied by gender, age, education level, and department.

Sample size has been determined by applying the statistical approach. In this study, the population size (N=4051) is finite.

Here,

$\quad$ N = 4051

$\quad$ α = 0.05

$\quad$ p = 0.5

$\quad$ q = 1 − p = 1 − 0.5 = 0.5

$\quad$ d = 0.05 (assuming 5% error of the study)

$\quad$ $z_{\alpha/2}$ = 1.96 (at 5% level of significance)

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{d^2} - 1\right)} = \frac{\frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2}}{1 + \frac{1}{4051}\left(\frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2} - 1\right)} = 350.96 \approx 351$$

So, the sample size is 351 including all the demographic variables like gender, education level, age, and all the departments. The reliability of this research is determined by Cronbach's Alpha which is 0.790.

6.2 Survey Instrument Design

A self-administered survey was developed. It consisted of five scenarios. Under each scenario, five questions were asked and were rated on a 5-point Likert scale with One (1)being strongly disagreed to a Five (5)strongly agreeing.

DATA COLLECTION INSTRUMENT (QUESTIONNAIRE)

Research Topic: Ethical Orientation and Behavior of BUBT Engineering Students.

Vignette 1: Asif is in his last semester in BUBT. He needs to maintain a certain percentage of attendance to sit for semester final exam. However, after mid-term, he went on an adventure visit with his friends. As a result, his attendance has fallen. Analyzing these facts, he has got an impression that he might fail to achieve the required percentage to qualify for the semester final exam. He is thinking to fake a medical certificate to convince his course teacher to allow him to attend the exam.

Now, based on the above scenario, please express your view below,

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Do you agree that it is ethical to fake a medical certificate to convince a faculty?					
2. As this is his final semester, do you support his attempt by faking not to extend another semester in his study life?					
3. Asif's family is very much in need of financial support from him. In this scenario, how much do you think Asif could change his approach to convince the course teacher?					
4. Given the situation mentioned, do you think the intention right?					
5. Would you do the same if you were that student?					

Vignette 2: Tareq is an average student. He wants to achieve good grades in the current semester. One of his course teachers gave him an assignment on a topic that is of little understanding to Tareq. To prepare a proper assignment, Tareq is thinking to copy from a reputed study found on the internet. He thinks that he will change the names of the study.

Now, based on the above scenario, please express your view below,

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Do you agree that it is right to copy from the internet to prepare a proper assignment?					
2. As this topic is of little understanding to Tareq,					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
do you support his attempt?					
3. Do you think he should change his strategy to prepare that assignment?					
4. Given the situation mentioned, do you think the intention right?					
5. Would you do the same if you were that student?					

Vignette 3: Kajal did not score well in his mid-term examination. He is very irregular in class. He is worried about his passing the course. Now, he has decided to try to convince the faculty member to consider and give good marks in remaining 30 marks which he thinks can be manipulated.

Now, based on the above scenario, please express your view below,

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Do you agree that it is right to think that the remaining 30 marks on faculty can be manipulated?					
2. Do you support this thinking?					
3. Do you think he should change his thinking?					
4. Given the situation mentioned, do you think the intention is right?					
5. Would you do the same if you were that student					

Vignette 4: Farhan is an amiable and adventurous person. He has planned a tour with his close friends. However, he does not have money to go for a tour. He is thinking to arrange the money required to go by telling a lie to his parents.

Now, based on the above scenario, please express your view below,

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Do you agree that it is right to lie to parents for a tour with friends?					
2. Do you support this incident?					
3. Do you think he should arrange the money differently?					
4. Given the situation mentioned, do you think the intention right?					
5. Would you do the same if you were that student					

Vignette 5: Tanjila is an enthusiastic debater. Her performance and achievements in debating are commendable. Tomorrow BUBT is going to take part in a national debate. The reporting time of the event is in the early morning, and she is very lazy. She thinks that other debaters are there, so she can sleep in the morning and skip the event.

Now, based on the above scenario, please express your view below,

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Do you agree that it is right to skip events where the reputation of the university is related?					
2. Do you support her plan of action?					
3. Do you think he should sacrifice her sleep for the sake of university?					
4. Given the situation mentioned, do you think the intention right?					
5. Would you do the same if you were that student?					

6.3 Statistical Design

6.3.1 Empirical Analysis

A structural equation modeling helps to get a required analysis done on this kind of research. For this study, SPSS data analysis software is used. SPSS data analysis software version 23 is used to identify the relationships among the variables. Regression, reliability, and coefficient analysis have been used in this study.

6.3.2 Regression Analysis Model

Regression analysis is used to illustrate the influence of independent variables on the dependent variable. The mathematical representation is as follow,

$$Y_i = \alpha_1 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots\cdots\cdots\cdots + \beta_k X_{ki} + u_i$$

Here,

Y_i = Dependent Variable,

α_1 = Constant,

β_1 = Coefficient of Independent Variable 1,

X_{1i} = Independent Variable 1,

β_2 = Coefficient of Independent Variable 2,

X_{2i} = Independent Variable 2,

β_3 = Coefficient of Independent Variable 3,

X_{3i} = Independent Variable 3,

β_k = Coefficient of Independent Variable k,

X_{ki} = Independent Variable k,

u_i = Residuals.

The intention of BUBT engineering students to take a decision is molded by thinking of rightness or wrongness of a behavior, supportiveness towards that behavior and controllability of that behavior. Regression analysis is run where the intention is dependent behavior,and the independent variables are rightness or wrongness of behavior expressed as attitude, supportiveness towards that behavior expressed as subjective and

controllability of that behavior which is expressed as a control. The outcome has illustrated,

$$Intension = \alpha_1 + \beta_1 \times Attitude + \beta_2 \times Subjective + \beta_3 \times Control + u_i$$

Here, α_1 is the constant and β_1, β_2 and β_3 are coefficients for attitude, subjective and control consecutively.

After identifying the intention to take a decision, a second regression is run to analyze whether BUBT engineering students behave how they intend to behave or not. The actualbehavior of the student expressed as behavior is dependent variable and intention of behavior expressed as the intention is independent variable here.

The outcome is like,

$$Behavior = \alpha_1 + \beta_1 \times Intention + u_i$$

Here, α_1 is the constant and β_1 is coefficient of intention.

6.3.3 Dependent Variables

While identifying the ethical decision-making pattern, behavioral Intention (Intention) is the dependent variable.

While the behavioral pattern of the students is observed, their actual behavior identification is made. In this case, Actual Behavior (Behavior) is the dependent variable.

6.3.4 Independent Variables

This study has used the same variables used by Ajzen (1985) which are Attitude toward the Behavior (Attitude), Subjective Norms (Subjective) and Perceived Behavioral Control (Control).

After identifying behavioral intentions, the analysis of actual behavior and behavioral intention reveals the behavioral pattern of BUBT engineering students. For that Behavioral intention (Intention) is used as an independent variable.

7. Results and Discussions

For the first part of the analysis to study the ethical orientation of BUBT engineering students, a regression analysis is run with intention as the dependent variable and attitude, control and control as independent variables. The model summary is,

Table 5.1: Model Summary of Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.638[a]	.407	.402	.44670

a. Predictors: (Constant), Control, Subjective, Attitude

The value in table 5.1 above shows that this model describes 40.7% of the data. That means this data set can explain 40.7% variance in Intention. The remaining can be reasons for the other unobserved variables.

Table 5.2: Regression Analysis Table (Intention, Attitude, Subjective and Control)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.282	.136		9.439	.000
	Attitude	.218	.044	.285	4.985	.000
	Subjective	.303	.044	.389	6.926	.000
	Control	-.104	.031	-.142	-3.291	.001

a. Dependent Variable: Intention

Hypothesis 1:

Null Hypothesis H_0: There is no significant relationship between attitude towards behavior and intention.

Alternative Hypothesis H_1: There is a significant relationship between attitude towards behavior and intention.

The coefficient for attitude (0.218) is significantly related with intention because its p-value is 0.000, which is smaller than 0.05. So, the null hypothesis is rejected. An alternative hypothesis is accepted. This means there is a significantrelationship between attitude towards behavior and intention. For a one-unit change of attitude, the intention is changed by 0.218 positively.

Hypothesis 2:

Null Hypothesis H_0: There is no significant relationship between supportiveness of behavior and intention.

Alternative Hypothesis H_1: There is a significant relationship between supportiveness of behavior and intention.

The coefficient for subjective (.303) is significantly related with intention because its p-value is 0.000, which is smaller than 0.05. So, the null hypothesis is rejected. An alternative hypothesis is accepted. This means there is a significantrelationship between supportiveness of behavior and intention. A one-unit change in supportiveness results the intention is changed by 0.303 positively.

Hypothesis 3:

Null Hypothesis H_0: There is no significant relationship between controllability of behavior and intention.

Alternative Hypothesis H_1: There is no significant relationship between controllability of behavior and intention.

The coefficient for control (-.104) is statistically significant with intention because its p-value is smaller than 0.05. So, the null hypothesis is rejected. An alternative hypothesis is accepted. This means there is a significantrelationship between controllability of behavior and intention. However, with controllability, the relation is significant and negative. For one-unit change in controllability results, 0.104 unit changes negatively.

From the regression analysis, it can be inferred that with the increase of positivity and supportiveness of an attitude creates increased intention to perform that action. However, if an attitude is better controllable, this causes reduced intention to do so.

The following equation can be drawn,

Intention = 1.282 + 0.218 x Attitude + 0.303 x Subjective − 0.104 x Control

For the next part in analyzingbehavioral pattern, a regression analysis between Behavior and Intention is run.

Table 5.3: Regression Analysis Table (Behavior, Intention)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.054	.084		.644	.520
	Intention	.890	.041	.756	21.579	.000

a. Dependent Variable: Behavior

Hypothesis 4:

Null Hypothesis H_0: There is no significant relationship between intention and actual behavior.

Alternative Hypothesis H_1: There is no significant relationship between intention and actual behavior.

The above table shows a significant relationship between intention and behavior. The coefficient for intention (.890) is statistically significant with intention because its p-value is smaller than 0.05. So, the null hypothesis is rejected. An alternative hypothesis is accepted. This means there is a significant relationship between intention and actual behavior. For one-unit change in intention results in 0.890 positive unit changes in behavior. So, when the intention of a person increases the behavioral phenomenon is also increased.

The following equation represents their relation,

$$\text{Behavior} = 0.\,054 + 0.890 \times \text{Intention}$$

This study reveals an insightful analysis of how BUBT engineering students take decisions during ethical dilemmas. In a situation, they analyze the rightness, supportiveness, and controllability of that action. If the action is found right and supportive, they make a positive intention. However, if the action is controllable, they are found to intent negatively. Most influential factors found is supportiveness. This means when they find the proper support, they can make that intention. Controllability plays an important role here. So, if the controllability increases their intention tends to reverse.

Also, between behavior and intention, they have a strong relation (0.89; near about 1). Meaning that after making an intention most of the timethe students behave similarly.

8. Findings and Recommendations

8.1 Findings of the Research

This research examined the ethical orientation and behavior of BUBT engineering students. The following are the findings:

- BUBT engineering students face ethical dilemma regularly.
- The student'sethical intentions are oriented by attitude (right or wrong), subjective norm (supportive or non-supportive) and behavior control (controllable or non-controllable).
- Among them, they are profoundly influenced by supportiveness. When the students face an ethical dilemma, they tend to make the intention to perform the action which is supported by the most.
- The second important factor is an attitude; the rightness or wrongness of an action. They usually make the intention which they think right.
- Controllability has a negative relation with behavioral intentions. They usually avoid the controllable actions.
- Behavioral intentions and behavior are highly interconnected. BUBT engineering students mostly behave by the intention they made analyzing rightness, supportiveness, and controllability.

8.2 Recommendations

This study analyzed the ethical orientation and behavior pattern of BUBT engineering students. According to this, the following recommendations have been made,

- It is recommended to teach students which is right and which is wrong.
- It is also essential to develop a psychology of supporting the right things in every student.
- An institution should make arrangements to control the actions inside.
- Universities should identify the uncontrollable actions and bring them under control.
- Students should have a clear perception to understand which is ethical and which is unethical.
- Universities should have more courses on ethics in the curriculum and extra-curriculum.

9. Limitations of the Study

This study has some limitations. Further research removing the limitations cited below will enrich this field of study and make it possible to prepare a better ethical education system for students:

Those limitations are,

- This research is done on only one university.
- Only engineering students are observed here.
- As BUBT offers programs of Textile, CSE, and EEE, the other streams of engineering are not observed.
- Only three factors have been considered for behavioral intentions.
- One theoretical dimensionis appliedto the study. Another related study might help to identify other hidden factors.

10. Conclusion

Ethical dilemmas are a common phenomenon in everyday life. Resolving these dilemmas is important. It is even more complicated for students. The ethical orientation has been identified by identifying, observing and analyzing the factors that direct and influence to make an ethical intention. The relative importance varied. The supportiveness towards an action has been proven most significant, secondly the rightness of an action and lastly but most significantly the controllability of an action. It is human nature to avoid controllable actions. Rightness makes it easy to choose a specific course of action among the alternatives. For BUBT engineering students they are willing to do things with proper support. These factors help to build an ethical intention. The intention is the psychological preparation of doing an action. However, reality sometimes differs. With external factors and other influences, behavioral intentions do not come to light on many occasions. However, BUBT engineering students should think before making a decision. After making an intention mostly they do that action. The variation found between behavioral intention and actual behavior is minimal. This proves the fact that ethical education is crucial. Especially in student life, ethical education will help them identify the rightful action, the sense of responsibility to support a good cause and analyze controllability. These will make them responsible, conscious and most importantly ethical. Engineers constitute one of the strong units of development in technology in a country. Necessary steps should be taken to make them more conscious in order to make an ethically developed society.

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Inappropriate Audit Partner Behavior: Views of Partners and Senior Managers

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Abstract

This study tries to explore the existence, extent and possible factors associated with inappropriate partner behavior. The target population for this study is audit partners and senior managers of Dhaka based CA (Chartered Accounting) firms. A questionnaire addressing these issues was given to senior managers and partners employed in auditing CA firms. In this study, inappropriate partner behavior was measured through a survey of 104 CA firms where five measures of inappropriate partner behavior were examined and their related incidences were listed. Prior studies focused on the behavior of staff and /or seniors. Studies that have included managers and partners (Alderman and Deitrick1982; Cook and Kelley 1988) have failed to address the tasks and responsibilities actually performed by firm executives during an audit. For example, managers / partners are usually asked either: (1) whether they believe that inappropriate audit sign off occurs among the staff and seniors within their firm, or (2) whether they would sign off on a hypothetical audit procedure (a procedure that is performed by lower-level employees and that, in reality, managers / partners would never perform). One possible reason for this orientation is that managers and partners typically perform a few, if any, of the procedures in the audit of program. Tasks and responsibilities of partners have not been examined in the previous studies on inappropriate audit signoff. This study examines inappropriate partner behavior by focusing on the critical duties and decisions of the partner.

This study has revealed that inappropriate audit partner behavior both GAAP and GAAS violations occurred in CA firm in Bangladesh. Percentage of occurrence of these violations were found to be significant (i.e., significantly differ from zero with p-value<0.05). These violations were almost the same for both partners and managers except Inadequate work paper review (IWR). However, the most important factor associated with inappropriate behavior was "Recent client issuance of debt/equity securities". With some limitations, all this study would help to understand the

existence and extent of inappropriate audit partner behavior as well as to identify the most important factors that are related to such behavior.

Keyword: *Inappropriate Audit behavior, GAAP violations, GAAS violations.*

1. Introduction

Auditors who engage in inappropriate behaviors of various kinds (e.g., signoff on audit steps that are not completed, issuance of an inappropriate opinion, etc.) are guilty of both noncompliance with professional norms and of violation of the public trust. Auditors in CA firms have to follow some accounting standards. These accounting standards are (i) Generally Accepted Accounting Principles (GAAP) and (ii) Generally Accepted Auditing Standards (GAAS). It is very relevant to find the answer whether the auditors of CA firms of Bangladesh fulfill these above-mentioned standards or not. If auditors do not maintain these standards, there will occur an inappropriate audit partner behavior. This study is conducted to visualize the present feature of inappropriate audit partner behavior existing in CA firms.

2. Importance of the Study

As an individual or small business owner, someone has to place trust in his/her accountant, auditor and other financial professionals. If this trust is misplaced; someone may be victimized of accounting malpractice. When financial professionals fail to cling to Generally Accepted Accounting Principles (GAAP) or Generally Accepted Auditing Standards (GAAS), accounting malpractice may have taken place. So, it is very important to prevent any kind of GAAP or GAAS violations while auditing. Like developed countries, maintaining accounting standards is very important in Bangladesh. So, to understand the inappropriate audit partner behavior like GAAP and GAAS violations; this study will be very helpful. This study will also help to discover the factors which are supposed to be associated with inappropriate partner behavior.

3. Literature Review

Alderman and Deitrick (1982, 60) found that 31% of seniors and 23% of staff believed that individuals within their own firm committed premature (i.e. inappropriate) signoff. Kelley and Margheim (1987) examined five

audit quality reduction acts. The mean rate of audit quality reduction acts, across their five measures, was 25.4%. Kelley and Margheim (1990,35), in another study of audit seniors and staff, found that 54% of their respondents were engaged in one or more audit quality reduction. Firm that audit Securities and Exchange Commission (SEC) registrants are required to be members of the (SEC Practice Section) SECPS in order to maintain American Institute of Certified Public Accountants (AICPA) membership (Wallace 1991). All of the respondents in this study were employed by a firm that audited SEC registrants. Peer review reports and the attendant comment letters provide a measure of firm performance. Wallace (1991) examined the peer review records of the SECPS for reports filed between 1980 and the first quarter of 1986. She found 87 percent of the review reports were unqualified, nine percent were uncertain, and four percent were modified. Wallace (1991, 58-59) also presented more specific data on the categories and frequencies of all peer reviews in which findings were reported in the following areas: (1) audit steps performed, 47 percent; (2) documentation of audit work, 34 percent; (3) supervision of work, five percent; (4) review of work, 19 percent; (5) audit planning, 31 percent; and (6) reporting, 28 percent. In addition, Wallace (1990) found that approximately 20 percent of all peer review reports indicated inadequate partner review. Generally speaking, these percentages are much higher than the perceived rates of inappropriate behavior found in the percent study. For example, the rates reported in the percent study for insufficient audit evidence, other GAAS violations, GAAP violations, and the failure to book material adjustments were all under seven percent. The rate for inadequate work paper review was more comparable; both studies found rates in the 20-25 percent range.

4. Research Objectives

From the discussion of problem statement and literature review the main objectives of this study are:

A) To evaluate the existence of GAAP and GAAS violations in audit firms.

B) To measure the extent of GAAP and GAAS violations in audit firms.

C) To explore the factors that are associated with inappropriate partner behavior.

5. Methodology

5.1 Research Design

This study tries to evaluate the existence and extent of GAAS and GAAP violations which may be considered as descriptive research. In addition, it was attempted to explore the association between some selected factors (mentioned in objectives) and inappropriate partner behavior. So, this study may also be considered as correlational research.

5.2 Research Variable and Questionnaire Development

The discussion of the research variables and the underlying theoretical consequence of those variables are presented with the development of the questionnaire. This is to facilitate the exploratory nature of this study and to integrate partner behaviour, audit quality reduction acts and the expected results from this investigation. A questionnaire was developed that focused on the inappropriate partner behavior. We operationalized this concept by asking whether partners and senior managers had ever directly observed a partner performing one or more of five audit quality reduction acts. These acts were: (1) gathering insufficient audit evidence, (2) performing inadequate work paper review, (3) committing other GAAS violations, (4) committing other GAAP violations and (5) failing to insist that the client book material adjustments. These five audit quality reduction acts are listed in the exhibit 1. If an individual observed any instances of inappropriate partner behavior, we also ask about the frequency of acts.

Two explicit choices made in the construction of the questionnaire should be noted. First, we did not ask partners to respond based on their own behavior since it would be difficult for partner to recognize and admit that they had been responsible for a violation of GAAP or GAAS. Prior studies in accounting (Dreike and Moeckel 1994; Hessing et al.1988) have concluded that individuals tend to underreport their own involvement in the inappropriate behaviour. We believe that a more valid measure of inappropriate partner behaviour results from asking about the behaviour of other partners that has been directly observed.

Second, we ask senior managers to evaluate the behaviour of partners. We assume that the senior managers have virtually the same information set as the partner and hence, they can evaluate the appropriateness of partner decisions and actions. Important for our purpose, the senior manager may be more objective since S/he does not have the final authority for the type

of audit opinion issued. The merit of our approach obviously depends on the validity of this assumption. Senior managers have been viewed as close surrogates for partner in other studies (see Lord 1992). Also, in an SEC enforcement action, both a big six partner and (senior) manager were sanctioned, even though the manager initially resisted the partner's instruction to sign off on the engagement (Rankin 1993). This suggests that the SEC views senior managers as a processing information set comparable to that of partners, sufficient to afford the senior manager a basis for reaching an independent conclusion as to the conduct of the audit and the type of opinion to be issued.

In addition to examining the existence and frequency of inappropriate partner behaviour, we also gather some information on some of the factors associated with this type of behaviour. We asked respondents whether any of seven institutional and/ or economic factors were associated with instances of inappropriate partner behaviour. These factors were

i)   Lack of independence
ii) Recent client issuance of debt/equity securities
iii) Debt/equity security issuance planned within next year
iv) High client leverage
v)   Fixed-fee adult contract
vi) Large client
vii) Time budget pressure

The form in which these items were presented in the questionnaire is attached in the exhibit appendix. All seven of these institutional and/ or economic factors may be positively associated with inappropriate partner behaviour. Independence is the foundation of external auditing. Yet, in a survey of AICPA members in public practice, Seiler and Simmons (1987) found that 30% of respondent felt that their independence was sometime impaired. Both GAAS and GAAP violations are more likely to be committed by partners who are not independent.

Clients who have recently issued debt/ equity securities or those planning to issue such securities in the near future may have a heightened sensitivity to reported financial results. Likewise, highly leverage companies may be subjected to restrictive financial covenants. This economic factor may lead the client to exert pressure on the auditor to acquiesce to questionable accounting methods and to waive proposed adjusting entries.

A fixed fee audit contact may have an adverse effect on audit quality. In the one prior study that included this variable (Kelley and Margheim 1987), there was no significant relationship between billing arrangement and audit quality reduction acts. However, Kelley and Margheim (1987) examined behaviours of only seniors and staff. Under a fixed free contact, we posit that insufficient evidence may be gathered and inadequate work paper review may be performed due to inability of the audit firm to bill for and collect on this work.

Richard Measelle, managing partner of Arthur Andersen, expressed a similar concern in a recent interview published in *Accounting Today* (1994,41): ". . . there is a point at which the work gets impacted based on the fee. I don't care what someone says. I am saying that low fees are potentially dangerous.

Large client may have enhanced the bargaining power in the auditor-client relationship. McKeown et al.(1991) found that among distressed companies larger entities are less likely to receive a modified opinion than are smaller companies. GAAP violation or GAAS violation may be more prevalent on the audits of larger companies. It is reasonable to expect that time budget pressure may be associated with inappropriate partner behaviour, particularly GAAS violations. A number of prior studies (Alderman and Deitrick1982; Cook and Kelley 1988; Kelly and Magheim 1990) have considered this factor with regard to audit quality reduction acts. In most of these studies (Alderman and Deitrick1982; Cook and Kelley 1988; Kelly and Magheim 1982) time budget pressure was significantly associated with reduced audit quality.

5.3 Sample

The populations of this study were partners and senior managers of CA firms of Bangladesh. Due to time and money constraints, only the CA firms of Dhaka are treated as target population. So, the list of all CA firms of Dhaka is the sampling frame. The list of CA firms is available in the webpage of ICAB[1](http://www.icab.org.bd). There are 143 CA firms in the list. So, population size is, $N = 143$.

5.4 Sample Size Determination

Due to unavailability of measurements of population parameters of study variables, the sample size was determined by the following conventional formula for a finite population.

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[1]ICAB= Institute of Chartered Accountants of Bangladesh

$Here, N = 143; \alpha = 5\% = 0.05; p = 0.5; q = 0.5; d = 0.05; Z_{\frac{\alpha}{2}} = 1.96$

Then the, sample size, $n = \dfrac{\frac{z^2_{\alpha/2}pq}{d^2}}{1+\frac{1}{N}(\frac{z^2_{\alpha/2}pq}{d^2} - 1)} = 104$

After determination of sample size, 104 CA firms were selected randomly from the sampling frame. But, only 24 firms were finally interviewed; which provided 48 respondents (24 partners and 24 senior managers). It comprised 23% responses of the total sample size.

One sample proportion test

One sample proportion test was applied to assess whether the inappropriate behavior rate is significantly different from zero for each inappropriate behavior.

Two samples independent proportion test

To investigate whether there was any significant difference in inappropriate behavior rate between partner and senior manager, independent two samples proportion test was applied.

6. Results and Analysis

6.1 Inappropriate Partner Behavior

The five measures of inappropriate partner behavior examined in this study and their related incidence are listed in panel A of Table 1 with the exception of inadequate work paper review, rates of in appropriate partner behavior ranged from a low of 52.1% (IWR) to 70.8% (GAAP violations). GAAP violations (of a critical engagement area) were perceived to be much more of a problem. Approximately 70.8 percent of the respondents reported at least one instance of partner failure in this regard. Based on the above results, partners and senior managers have directly observed instances where partners act in an inappropriate manner. We tested whether the reported rate of inappropriate partner behavior was statistically different from zero for each of the measures examined. Based on a test of sample proportions, the rate of inappropriate behavior reported in this study was statistically different from zero (p<0.01) for each of the five measures examined.

There are a number of plausible explanations for inadequate work paper review. The desire by clients to release earnings quickly, coupled with other partner responsibilities near the end of an audit, may result in

sufficient partner time spent in reviewing work papers. In addition, clients may view work paper review as non –value added, work with the attendant negative implications for fee collectability.

The consequences of inadequate work paper review to the individual, firm and profession can be severe. Inadequate review not only results in a violation of professional standards, but it also has resulted in enforcement actions against accountings firms.

6.2 Incidence

Given a perception (among our respondents) that partners sometimes act in an inappropriate manner, a related issue is the frequency of such behavior. If a respondent had observed a particular inappropriate behavior, we asked whether such a behavior was observed once, a few times or many times. For each of the five measures examined, reported instances of inappropriate partner behavior were most commonly observed a few times. A significant minority of that observing inappropriate partner behavior had seen such behavior on only one occasion.

## Table 4.1: Panel A: Existence and Extent of Inappropriate Partner Behavior

	Frequency (n)		If Behavior observed, Frequency of Such		
Partner Behavior	Behavior Never Observed	Behavior Observed	Once	Few times	Many times
Insufficient audit evidence (IAE)	16	32	11	16	5
	(33.3%)	(66.7%)	(34.4%)	(50.0%)	(15.6%)
Inadequate workpaper review (IWR)	23	25	12	10	3
	(47.9%)	(52.1%)	(48.0%)	(40.0%)	(12.0%)
Other GAAS violations (OGV)	21	27	9	13	5
	(43.8%)	(56.3%)	(33.3%)	(48.1%)	(18.5%)
GAAP violations (GV)	14	34	19	4	11
	(29.2%)	(70.8%)	(55.9%)	(11.8%)	(32.4%)
Failure to book material adjustments (FBMA)	17	30	14	10	6
	(35.4%)	(62.5%)	(46.7%)	(33.3%)	(20.0%)

Panel B: Factors Associated with Inappropriate Partner Behavior

	GAAS Violations			GAAP Violations			Pct. of All Factors Chosen
Factor	**IAE**	**IWR**	**OGV**	**GV**	**FBMA**	**Total**	
Lack of independence	19	23	17	23	21	103	16.86%
Recent client issuance of debt/equity securities	27	18	17	18	24	104	17.02%
Debt/equity security issuance planned within next year	18	13	18	23	16	88	14.40%
High client leverage	22	5	13	21	15	76	12.44%
Fixed-fee audit contract	15	14	19	17	16	81	13.26%
Large client	18	11	18	18	19	84	13.75%
Time budget pressure	22	13	11	15	14	75	12.27%

Finally, respondents also observed these inappropriate behaviors many times. Incidence of inappropriate partner behavior is also reported in panel A of the Table 4.1.

Figure 4.1: Existence of Inappropriate Partner Behavior
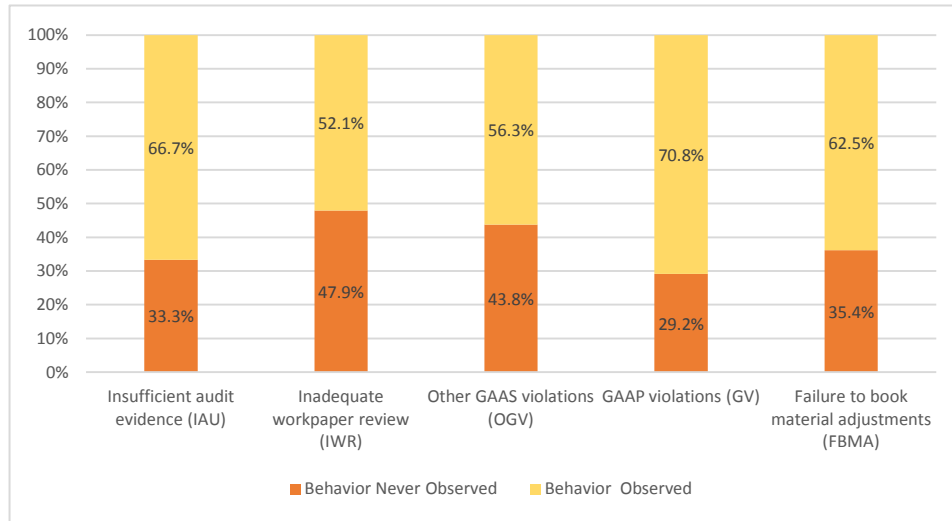
Figure 4.2: Extent of Inappropriate Partner Behavior
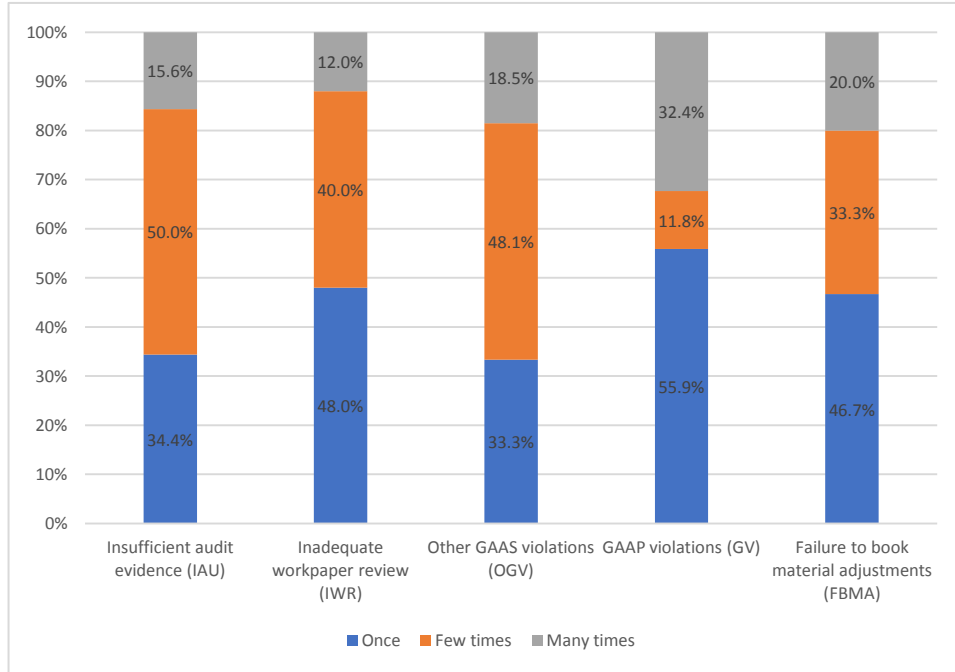
6.3 Factors Associated with Inappropriate Partner Behavior

As discussed previously, we posit that a number of institutional and economic factors may be associated with inappropriate partner behavior. The frequency with which these factors are associated with such behavior is reported in panel B of Table 1.

The most significant factor associated with inappropriate partner behavior, considering all five behaviors together, was the presence of a fixed fee contract. The presence of a fixed fee contact suggests that the client has enhanced bargaining power in the auditor- client relationship. As a consequence of a fixed -fee contract, the audit partner is more likely to be concerned with controlling audit hours incurred on the engagement. This may result in the gathering of insufficient evidence and /or in the conduct of an inadequate review of engagement workpapers (GASS violations). Another potential consequence of enhanced client bargaining power is that the auditor may be more likely to accept questionable client accounting, to waive larger proposed adjusting entries and to show more pliability when forming an audit opinion (GAAP and GASS violations). Many, perhaps most, audit partners will not acquiesce to client pressure. However, the potential consequences to these partners reduced firm profitability if

excess audit hours are incurred on a fixed fee engagement and in some cases, even greater damage to profitability if the client decides to terminate the relationship. These potential consequences are likely to particularly affect behavior where partner compensation is primarily tied to office results rather than firm-wide results (see trumpeter 1994). The next three factors contributing to inappropriate partner behavior were (large) client size, (high) leverage, and time budget pressure. A recent issuance of debt or equity, a planned issuance of such and a lack of partner independence were not frequently mentioned as being associated with inappropriate behaviors.

Three of the five measures of inappropriate behavior (insufficient audit evidence, inadequate work paper review and other GASS violations) are indicators of GASS violations. As expected, the factor most frequently associated with these violations was the presence of a fixed –fee contract. Other factors moderately associated with GASS violations were client size, leverage, and budget pressure. Client size and budget pressure were expected to be associated with GASS violations; whereas, leverage was not.

The factor most frequently associated with GAAP violations and failure to book material adjustments was client size. The presences of fixed fee contract and client leverage were also associated with both types of GAAP violations. Although we did not predict a high correlation between GAAP violations and a fixed fee contract, as previously discussed, the enhanced bargaining power of the client may contribute to GAPP violations. The positive relationship between audit contract type, client size, client leverage, budget pressure and inappropriate partner behavior has troubling implications for the profession. Given the intense and growing competition that characterizes the public accounting profession, we expect fixed fee contracts and tight budgets to become more prevalent in the future. In fact, it has been suggested that time-based billing will be virtually extinct by the year 2000 (Telberg 1993). The positive relationship between client leverage and inappropriate partner behavior suggests that certain client characteristics can negatively influence firm behavior. Consistent with prior literature (McKeon et al. 1991), it appears that large clients have enhanced bargaining power in auditor client disagreements. This result is not surprising, and indeed it is a trend that may be accelerating, given the increasing importance of consulting services to firm revenues and profits. Consulting services continue to be the fastest growing business segment for all of the Big 6 firms (*Public Accounting Report 1995*).

Large, Multinational entities are frequent purchasers of these services; hence, there is a potentially harmful effect on audit behavior as consulting services grow ever larger.

Figure 4.3: Factors Associated with Inappropriate Partner Behavior
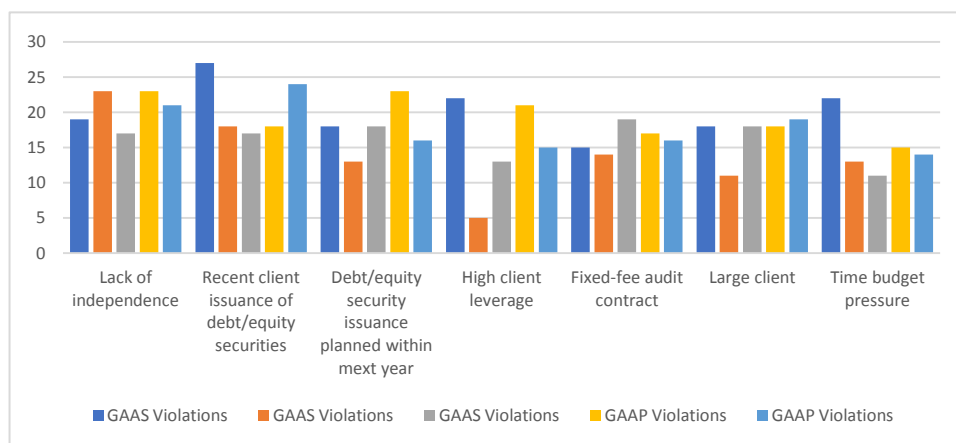
6.4 Separate Analyses for Partner and Senior Managers

One potential criticism of this study might be that senior managers are not qualified to evaluate the behavior of partners. To address this concern, we have analyzed our results separately by job position. The only behavior there was a significant difference (p=.03) between the two groups was inadequate work paper review (Table 4.2). Partners felt that inadequate partner review was more prevalent (75%) than did senior managers themselves (29%), this difference may reflect the fact that the partners tend to perform, and hence are more comfortable with, a more detailed level of review. See Table 4.3 for further details.

Table 4.2: Partner Behavior Comparison

Partner Behavior	Proportion of Behavior Observed by Partner	Proportion of Behavior Observed Manager	Proportion difference	z-value	p-value
Insufficient audit evidence (IAE)	0.71	0.63	0.08	0.433861	0.730
Inadequate workpaper review (IWR)	0.75	0.29	0.46	3.394674	0.003**
Other GAAS violations (OGV)	0.58	0.54	0.04	0.256776	0.382
GAAP violations (GV)	0.63	0.79	-0.17	-0.82078	0.178
Failure to book material adjustments (FBMA)	0.67	0.58	0.08	0.46291	0.334

Partner and senior managers held similar views as to the factor associated with inadequate behaviors. Factors that were important to both groups included a fixed-fee arrangement, client size, leverage, and budget pressure. The similar result obtained when analyzing partners and senior managers separately provide limited support for our earlier supposition that these two groups have comparable information sets. More importantly, even if their information sets do differ, this did not cause their views of inappropriate partner behavior to differ.
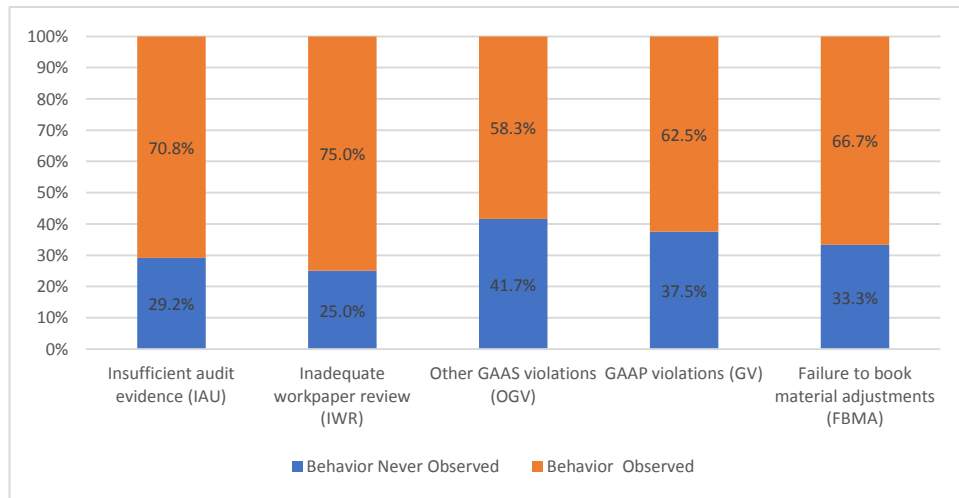
Table 4.3: Panel A: Existence and Extent of Inappropriate Partner Behavior-Partner

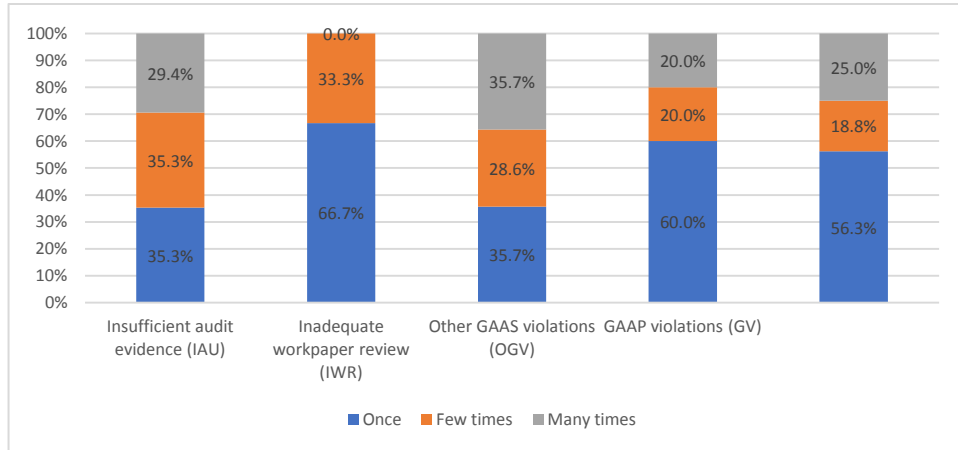| Partner Behavior	Frequency (n)		If Behavior observed, Frequency of such		
	Behavior Never Observed	Behavior Observed	Once	Few times	Many times
Insufficient audit evidence (IAE)	7	17	6	6	5
	(29.2%)	(70.8%)	(35.3%)	(35.3%)	(29.4%)
Inadequate workpaper review (IWR)	6	18	12	6	0
	(25.0%)	(75.0%)	(66.7%)	(33.3%)	(0.0%)
Other GAAS violations (OGV)	10	14	5	4	5
	(41.7%)	(58.3%)	(35.7%)	(28.6%)	(35.7%)
GAAP violations (GV)	9	15	9	3	3
	(37.5%)	(62.5%)	(60.0%)	(20.0%)	(20.0%)
Failure to book material adjustments (FBMA)	8	16	9	3	4
	(33.3%)	(66.7%)	(56.3%)	(18.8%)	(25.0%)

Panel B: Factors Associated with Inappropriate Partner Behavior-Partner

| Factor	GAAS Violations			GAAP Violations			Pct. of All Factors Chosen
	IAE	IWR	OGV	GV	FBMA	Total	
Lack of independence	12	16	6	10	11	55	15.32%
Recent client issuance of debt/ equity securities	15	15	9	9	13	61	16.99%
Debt/equity security issuance planned within next year	11	9	10	7	11	48	13.37%
High client leverage	10	4	9	12	12	47	13.09%
Fixed-fee audit contract	10	7	11	6	11	45	12.53%
Large client	12	10	11	11	9	53	14.76%
Time budget pressure	13	9	10	10	8	50	13.93%

Figure 4.4: Existence of Inappropriate Partner Behavior-Partner

Figure 4.5: Extent of Inappropriate Partner Behavior-Partner

Figure 4.6: Factors Associated with Inappropriate Partner Behavior-Partner
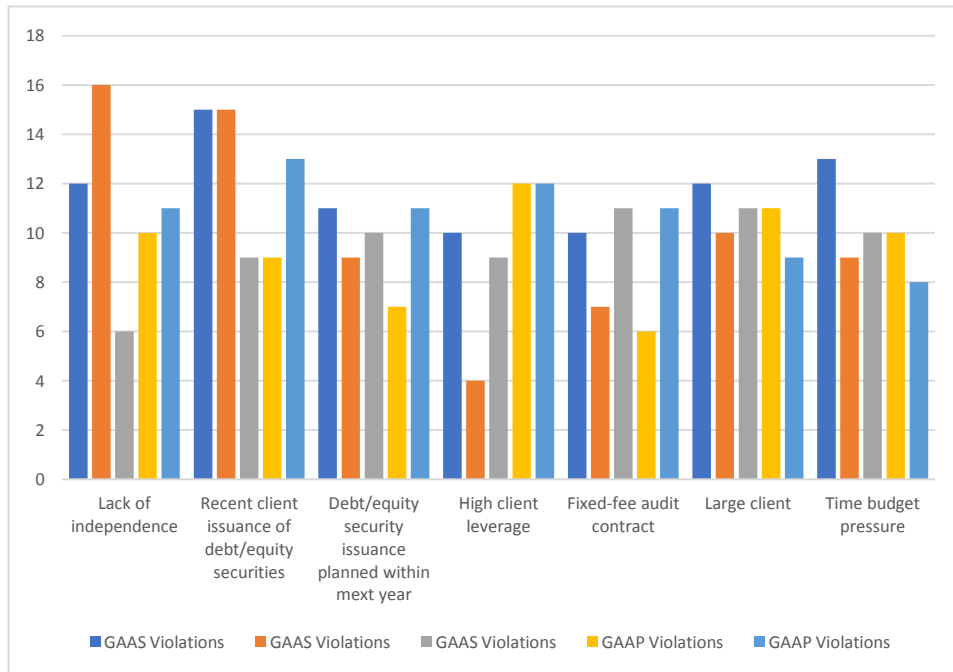
TABLE 4.3 (continued)

Panel C: Existence and Extent of Inappropriate Partner Behavior-Manager

| | Frequency (n) | | If Behavior observed, Frequency of such | | |
| | | | | | |
Partner Behavior	**Behavior Never Observed**	**Behavior Observed**	**Once**	**Few times**	**Many times**
Insufficient audit evidence (IAE)	9 (37.5%)	15 (62.5%)	5 (33.3%)	10 (66.7%)	0 (0.0%)
Inadequate workpaper review (IWR)	17 (70.8%)	7 (29.2%)	0 (0.0%)	4 (57.1%)	3 (42.9%)
Other GAAS violations (OGV)	11 (45.8%)	13 (54.2%)	4 (30.8%)	9 (69.2%)	0 (0.0%)
GAAP violations (GV)	5 (20.8%)	19 (79.2%)	10 (52.6%)	1 (5.3%)	8 (42.1%)
Failure to book material adjustments (FBMA)	9 (37.5%)	14 (58.3%)	5 (35.7%)	7 (50.0%)	2 (14.3%)

Panel D: Factors Associated with Inappropriate Partner Behavior-Manager

| Factor | GAAS Violations | | | GAAP Violations | | Total | Pct. Of All Factors Chosen |
	IAE	IWR	OGV	GV	FBMA		
Lack of independence	7	7	11	13	10	48	19.05%
Recent client issuance of debt/equity securities	12	3	8	9	11	43	17.06%
Debt/equity security issuance planned within next year	7	4	8	16	5	40	15.87%
High client leverage	12	1	4	9	3	29	11.51%
Fixed-fee audit contract	5	7	8	11	5	36	14.29%
Large client	6	1	7	7	10	31	12.30%
Time budget pressure	9	4	1	5	6	25	9.92%

Figure 4.7: Existence of Inappropriate Partner Behavior-Manager
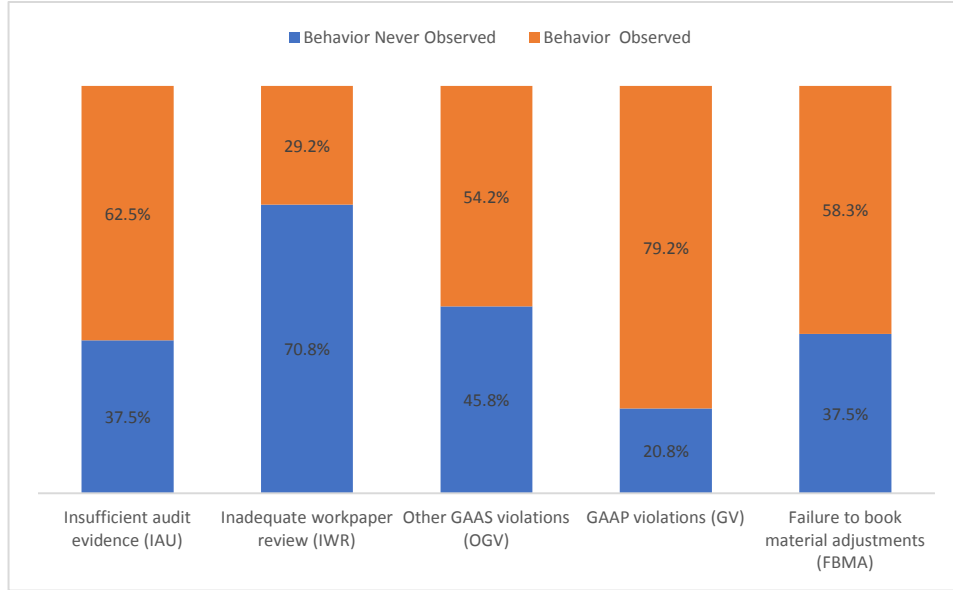
Figure 4.8: Extent of Inappropriate Partner Behavior-Manager
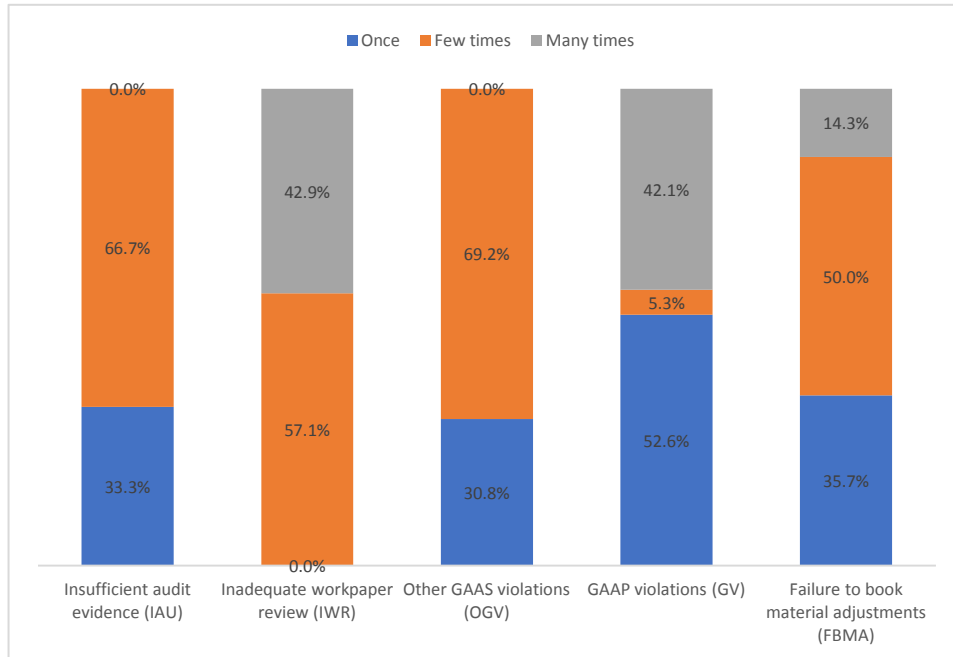
Figure 4.9: Factors Associated with Inappropriate Partner Behavior-Manager
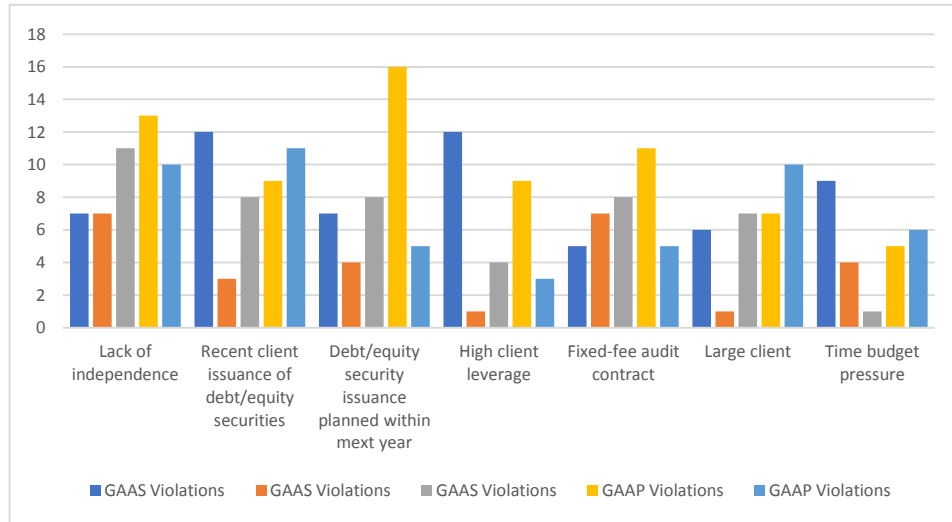
7. Discussion

A significant level of responding partners and senior managers experienced that they had observed one or more audit quality reduction acts by partners. This result is particularly expected as human error or bad intensions may exist. However, the inadequate workpaper review observed by the relatively high levels of partners and senior managers indicated it to be a potentially serious problem that the profession needs to address. To provide a standard with which to evaluate these results, we differentiate the perceived extent of inappropriate partner behaviors with: (1) results from other studies on inappropriate audit signoff where the primary focus has been on seniors and stuff, and (2) results from the peer review program administrated by the AICPA's SEC Practice Section (SECPS).

8. Summary, Limitations and Conclusion

Based on a survey of audit partners and senior managers, we found that these groups believe that certain inappropriate partner behaviors occur. A questionnaire was sent to a sample of partner and senior managers of 24 largest CA firms located in Dhaka; these individuals were asked whether, in their role as a partner or a senior manager, they had ever directly observed another partner engaging in certain audit quality reduction acts. The five GAAP and GAAS violations examined had never been observed by 25% or more of the respondents. However, at least 52 % of the

respondents reported observing one or more instances of inadequate workpaper review. Inadequate workpaper review violations examined, the level of inappropriate behavior was significantly greater than zero. Also results from studies of SECPS peer review indicate a greater level of inappropriate behavior than was found in this study. The most common factor associated with inappropriate partner behavior was the presence of recent client issuance of debt/equity securities. Additional factors associated with inappropriate partner behavior were lack of independence, debt/equity security issuance planned within next year, larger client size, fixed-fee audit contract, high client leverage and time budget pressure.

This study is subjected to a number of limitations as it is exploratory in nature. Like most survey studies, response bias may exist. As questionnaire was provided to respondents with total anonymity with a short time interval and non-response bias.

There is also a possibility that the responses received may be biased. We collected perception data about the judgmental decisions made by partners and senior managers. A partner or senior manager may believe that another partner acted in an inappropriate manner; however, the supposed inappropriate behavior may represent nothing more than an issue where an honest difference of professional opinion exists. Second it is possible that senior managers, and even other partners, are not privy to same information set as the engagement partners. Therefore, actions of the engagement partner that appear inappropriate may be evaluated differently given more complete information. Third, given the intense competition in public accounting, a certain number of partners and senior managers may be alienated from the firm at any given moment. It is possible that a disproportionate number of our respondent were angry with their firm. If so, we cannot ignore the possibility of biased responses. All three of the above limitations would have the effect of overstating the rate of inappropriate partner behavior. However, there are other limitations that would have the effect of understanding the rate of inappropriate partner behavior. First, as discussed previously, senior managers and partners may not always recognize inappropriate behavior due to the firm acculturation process. Second, respondent may have been positively biased in their answers, one could argue that individuals would want to portray their firm and the profession favorably, if for no other reason than self-interest. Given that there is no evidence to suggest that one form of bias is more likely than other, it seems appropriate initially to accept our results as providing a useful, if limited, information on partner behavior.

Finally, an important limitation of our study is that the inappropriate behaviors we examine represent a violation of professional standards. There are a number of ethical issues that we do not address. The most important of these is that we do not examine the extent to which audit partners act as client advocates. Anecdotal evidence suggests that such advocacy behavior is not uncommon. The past chief accountant of the securities and exchange commission, Walter Schuetze(1994), has accused auditing firms of acting as advocates for "incredible" accounting proposals advanced by their clients. The extent of client advocacy that auditing firms engage in is a potentially fruitful topic for future research.

In our view, this study makes two important contributions to the literature. First, partner review of engagement workpapers appears inadequate. Almost 52% of all respondents felt that partners sometimes perform an inadequate review of critical work papers. Partner review is critical in preventing a firm from issuing an inappropriate audit opinion. This issue merits immediate attention by firms and the profession. Second, inappropriate partner behavior appears to be linked with two economic variables: fixed fee contracts and large client size. We recommend that regulators carefully evaluate the implications for auditor independence and objectivity of the changes taking place in the audit environment. The relentless pressure on auditors to remain vigilant in protecting the public interest is essential.

This study represents an initial attempt to study inappropriate partner behavior. To paraphrase Harry Truman, the buck stops with audit partners. Any attempt to understand inappropriate partner behavior will be incomplete if we fail to consider the ethics and actions of audit partners.

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A Comparative Study on Spirality of Multiple Feeder and Engineering Stripe Single Jersey Knitted Fabrics

Salvia Rahman

Abstract

Spirality is certainly a serious problem in case of weft knitted fabric structures. It is a dimensional distortion in circular weft knitted fabrics and has a negative influence on both aesthetic and functional properties of fabrics as well as the garments. A number of parameters: yarn quality (especially yarn twist), fabric stitch length, the number of active feeders, machine gauge, machine diameter, textile dyeing, washing or finishing process have influences on fabric spirality. However, no one provides any study which can compare the spirality of single jersey weft knitted fabrics produced from multi-feeder and engineering stripe circular knitting machines. This paper focuses on the number of feeders used to produce courses in a repeat in the fabric as one of the key aspects of spirality. Fabrics produced from engineering stripe or auto stripe machine are better in quality in case of spirality, whatever the fabric might be stripe or plain designed one.

Keywords: Knitting, weft knitting, courses, wales, spirality, single jersey, Engineering stripe, Multi-Feeder stripe.

1. Literature Review

In the last few years knitted fabrics are popularly used in manufacturing fashion garments and even it has the potential in the formal wear segments as well (N. Afroz, 2012).

However, these widely used knitted fabrics have an unavoidable dimensional distortion problem, particularly for single jersey weft knitted fabrics due to asymmetric loops (DL, 2003), (Pavko-Cuden, 2015) which is generally termed as "Spirallity".

It is essential to remain wales and courses of the knitted fabric in perpendicular to each other (Figure 1.a and 1.b). However, the wales or courses in certain cases are not always perpendicular to each other and thus forming skew with a spirality angle as seen in Figure 1. (b). That

skew (2. a and 2. b), known as Spirality, which is a severe problem in knitted fabrics, especially in the apparel industry (Ozkan Celik, 2005), (M.D. de Araujo G. S., 1989), (M.D. de Araujo G. W., 1989).
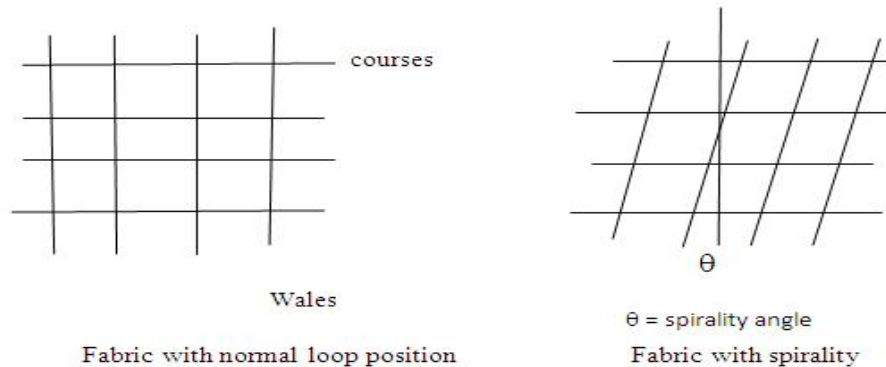

Fig. 1, (a) Fabric with normal loop position,   Fig. 1, (b)Fabric with spirality.

Wale Skew   Course Skew

Fig. 2, (a), (b) Examples of wale and course skew

In case of circular weft knitted fabrics, this spirality arises quality complexities in the produced garments which generally appear as the displacement of side seams of outfits during garment confection and use (N. Afroz, 2012), (Md. Milon Hossain, 2012). Mostly, spirality is an inherent problem of the single jersey circular weft knitted structures. It does not appear enough in interlock and rib weft knitted structures because the wale on the face is counter balanced by a wale on the back (N. Afroz, 2012).

The major causes of spirality in case of weft knitted structures can be categorized into two groups; material causes and process causes, where material causes include yarns, yarn twist-liveliness and process causes include the number of feeders of circular knitting machine (Pavko-Cuden, 2015), loop length, knitting machine types, machine diameter, machine gauge etc.

At present two kinds of circular knitting machines are available to produce single jersrey circular knitted fabrics: multiple feeder stripe and engineering or auto stripe knitting machine. However, including stripes design using dyed yarn, grey plain designed weft knitted fabrics can also be produced on Engineering stripe weft knitting machine.

Although, multi feeder stripe knitting machine has some limitations on courses in a repeat to produce stripe design on the fabrics whereas, Engineering or Auto stripe knitting machine can produce any number of courses for stripe design using several dyed yarns (Md. Eanamul Haque Nizam, 2015).

Usually, a large numbers of feeders will be required to large repeat per courses which is performed easily by the finger mechanism of Auto stripe machine. Since, maintenance cost is quite higher, it makes the fabric little expensive compared to multi-feeder stripes fabric (Md. Eanamul Haque Nizam, 2015)

Therefore, in this paper, I am focusing on causes of spirality due to the number of used feeders, whichever is used more in auto striping circular knitting machine or single jersey circular knitting machine in order to produce single jersey stripe designed (all knit loops) fabrics as both machines can produce plain single jersey knitted fabrics.

2. Materials and Methodology

Materials Preparation:

Experiments were carried out to investigate the effect of the number of active feeders used in courses per repeat in weft circular knitting machine during knitting, on the spirality percentages of the produced fabrics.

In total, ten (10) stripe fabric samples are produced both from auto stripe and multi-feeder stripe circular weft knitting machines using different number of feeders in a repeat of courses with 2.67 mm and 2.90 mm stitch length respectively for a series of experiments. The single jersey stripes knitted fabrics were produced from selected two different yarn count ($26^s/1$ and $28^s/1$).

Parameters of the knitting machines are as follows:

Single Jersey circular knitting Machine (multiple feeder):

  Brand name of machine   : Jiunn long (Taiwan)

Diameter of machine	: 30"
Number of active feeders	: 40, 102,122, 148, 148 respectively
Machine gauge	: 24G
Machine speed	: 20 rpm

Engineering stripe knitting machine:

Brand name of machine	: Mayer & Cie (Germany)
Diameter of machine	: 30"
Number of active feeders	: 223, 228, 230, 245, 251 respectively
Machine gauge	: 26G
Machine speed	: 20 rpm

The fabrics were treated by normal wash on an automatic washing machine with ISO Standard Reference Detergent and dried on Tumble Dryer. Condition the garments in the standard atmosphere (Temperature 27°C ± 2°C and Relative Humidity 65% ± 2%) for minimum of 4 hours in order to test in accordance with ISO 139. The test specimen consists of the body part of a finished garment only applying side seam (mock garment).

Method to Measure Spirality:

Spriality is measured by the number of degrees of distortion that the fabric is away from a 90° relationship of wale to course. Fabrics of around 10° spirality are commonly processed, although acceptability varies with the quality, price bracket, and end use of the particular goods.

Spirality percentage depends on fabric torque and garment structure. Tensioning mass, ruler, protractor, indelible ink marker pen, Right triangle, Tape or rule marked in millimeters, are required to measure the spirality of the mock garment according to ISO 16322-1: 2005-2.

The spirality percentage is calculated using the following measurement formula:

$S = \frac{\alpha - \beta}{\alpha} \times 100$

Where,

S = percent spirality changed after laundering, expressed as a percentage of the original;

α= original wale spirality angle, expressed in degrees

β= wale spirality angle after laundering, expressed in degrees.

3. Results and Discussion

**Table 1 shows the spirality percentages for multi-feeder stripes fabrics**

Fabrics Type	No. of active Feeders	Stitch Length (mm)	No of course in a repeat	M/C gauge	M/C Dia (″)	Yarn Count (Ne)	Spirality percentage (%)
F.ST.S/J[1]	40	2.7	40	24	34	28	6%
F.ST.S/J	102	2.7	102	24	34	28	10%
F.ST.S/J	132	2.7	132	24	34	28	13%
F.ST.S/J	153	2.7	153	24	34	28	14%
F.ST.S/J	180	2.7	180	24	34	28	16%

Table 2 shows the spirality percentages for engineering stripe fabrics

| Fabrics Type	No. of active Feeders	Stitch Length (mm)	No of course in a repeat	M/C gauge	M/C Dia (″)	Yarn Count (Ne)	Spirality percentage (%)
ENG.ST.S/J[2]	48	2.90	223	24	30	26	8%
ENG.ST.S/J	48	2.90	228	24	30	26	9%
ENG.ST.S/J	48	2.90	230	24	30	26	9%
ENG.ST.S/J	48	2.90	245	24	30	26	10%
ENG.ST.S/J	48	2.90	251	24	30	26	12%

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[1] Feeder Stripe Single Jersey fabric
[2] Engineering Stripe Single Jersey fabric
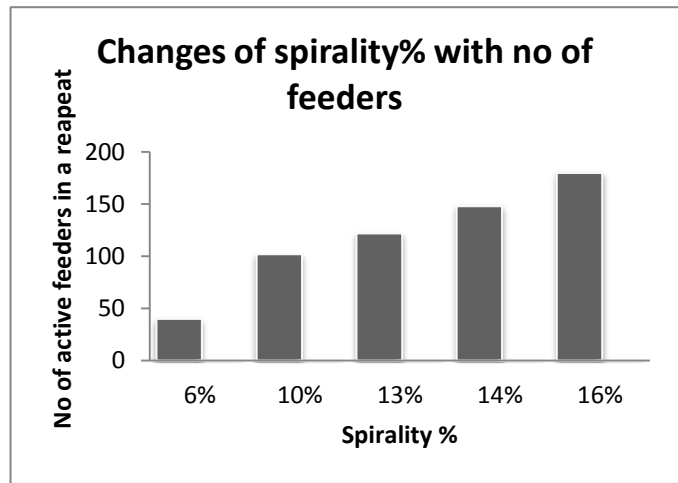
Graph 1: Effect of feeder's number on spirality% of multiple
feeders circular knitting machine

According to Graph 1, it is observed that, the number of feeders has a great influence on spirality. Highest spirality % (16%) is obtained in 180 feeders and with the reduction of feeders number, spirality % is reduced upto 6% for 40 feeders per courses.
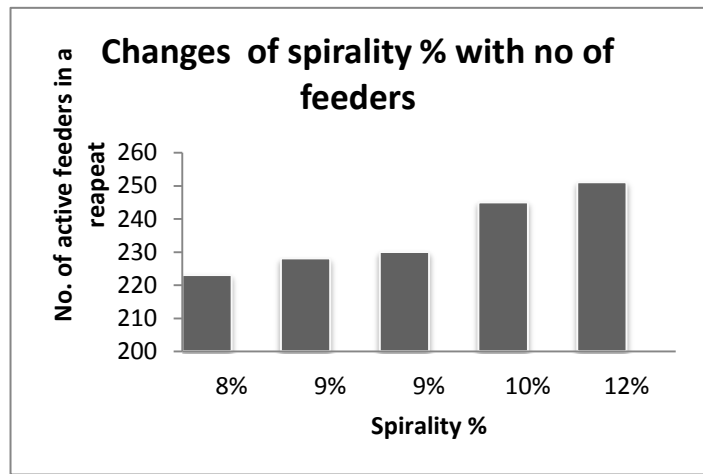
Graph 2: Effect of feeder's number on spirality % of
engineering stripe circular knitting machine

In Graph 2, the spirality % increases from 8% (for 223 feeders) to 12 % (for 251 feeders) for engineering stripe circular knitting machine. It is observed that, in engineering stripe machine, spirality % increases in an insignificantly manner in terms of related feeders number.
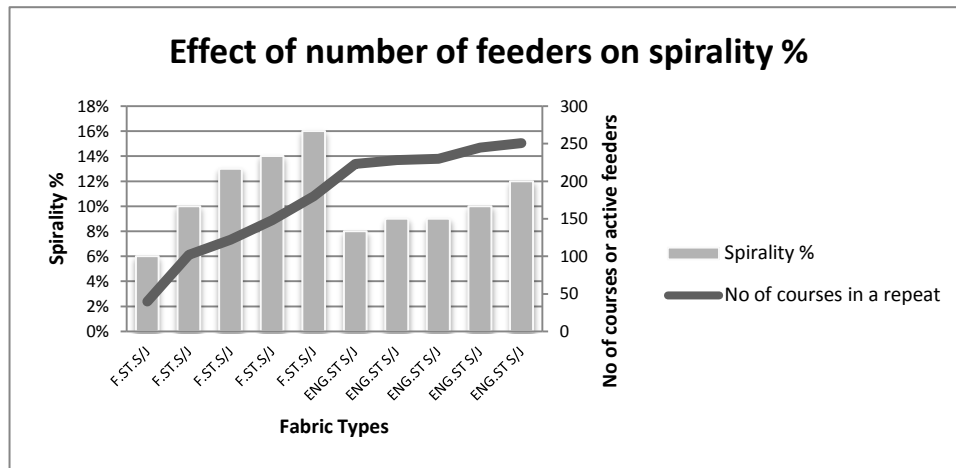
Graph 3: Comparative study on spirality % of multiple
feeder and engineering stripe fabrics

From Graph 3, it is clear that, spirality increases strongly with increasing number of working feeders on the machine (spirality % incresead from 6% -16% for multiple feeders knitting machine and 8%- 12% for engineering stripe circular knitting machine depending upon the number of utilized feeders) . These increments of spirality in a repeat of courses at a constant machine diameter and machine gauge are only due to the number of active feeders during knitting process. Spirality was 6% for 40 feeders, which increased upto 16 % for only 180 feeders in case of multiple feeder machine. Conversely, for engineering stripe machine, the spirality was 12% for 251 feeders, which is enough bigger repeat sized design, compared to multifeeder machine with least spirality percentages.

However, multiple feeders in a circular knitting machine influences the angle of spirality which is considered as one of the major causes of spirality of weft circular knitted fabrics (Kurbek, 2008).

Due to more course inclination on the fabrics in order to use multiple feeders, spirality percentage is more. The courses of a fabric, knitted in a given feeder have to be inclined with a certain angle in order to permit the knock over of the row of stitches knitted in the following feeder. For these reasons, multiple feeder circular knitting machines present more spirality percentages than an engineering stripe circular knitting machine, though an engineering stripes machine reveals higher courses per repeat with the help of finger mechanism instead of using a large number of feeders.
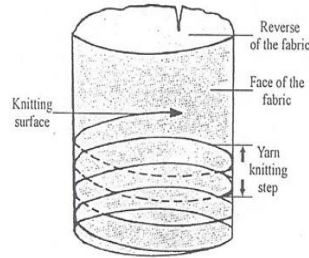
Fig. 3: Inclined courses due to spirality

Table 3: Amount of increment of spirality percentages for multiple feeder fabrics

Fabric Types	No. of feeders	No of Courses per repeat	Spirality %	Increment of Spirality percentages
F.ST. S/J[3]	40	40	6%	0%
F.ST. S/J	102	102	10%	4%
F.ST. S/J	132	132	13%	3%
F.ST. S/J	153	153	14%	1%
F.ST. S/J	180	180	16%	2%

Table 4: Amount of increment of spirality percentages for engineering stripe fabrics

Fabric Types	No. of feeders	No. of courses per repeat	Spirality %	Increment of Spirality percentages
ENG.ST. S/J[4]	48	223	8%	0%
ENG.ST. S/J	48	228	9%	1%
ENG.ST. S/J	48	230	9%	0%
ENG.ST. S/J	48	245	10%	1%
ENG.ST. S/J	48	251	12%	2%

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[3] Feeder Stripe Single Jersey
[4] Engineering Stripe Single Jersey

According to the Table 3 and Table 4, it is also observed that, spirality percentage of fabrics does not follow any linear relationship with the number of feeders, whether the fabric is produced from multiple feeders or engineering stripe circular knitting machine.

4. Conclusion

The highest spirality % of the single jersey knit cotton fabrics produced from 180 multiple feeders knitting machine, only produces 180 courses in a repeat of the fabrics. On the other hand, using only 48 feeders, engineering stripe circular knitting machine produced 251 courses design with only 12% spirality. These larger number of repeat size of courses is possible in case of engineering stripe knitting machine which is facilitated with finger mechanism to produce more courses in a repeat without little impact on spirality % compared to the multiple feeder circular knitting machine. The results also represent that, spirality has no linear relationship with the number of feeders of the machine. Further study can be pursued in future to observe the effect of yarn elongation, different fabric construction on spirality of cotton or blended knitted fabrics. The research indicates that the control of fabric spirality is therefore a team effort. A knitter contributes by the choice of yarn, loop length, knitting machine types etc and a finisher can contribute to the method of finishing of the produced fabrics.

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Enumerating Exchange Rate Fluctuation and Ascertaining its Impact on Economic Growth in Bangladesh

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Abstract

This paper intends to explore how exchange rate fluctuates over time and the impact of the exchange rate fluctuation on the economic growth of Bangladesh. Along with this variable, exchange rate fluctuation, two other variables (government expenditure and money supply which are indicators of fiscal policy and monetary policy respectively) are included. Here the causal relationship among the variables are based on annual data from 1975 to 2015 is also examined. ARCH model is used to estimate Exchange rate fluctuation. Unit root test is applied to make the variables stationary. The Johansen Co-integration likelihood approach and the Granger Causality test are employed to evaluate the long run relationship and to detect the direction of causality among the variables. The result shows that in the long run the output is positively affected by government expenditure and money supply but the effect of exchange rate fluctuation is negative. Thus to accelerate economic growth of Bangladesh it is necessary to maintain expansionary fiscal and monetary policy and manage the exchange rate efficiently.

Keywords: Exchange Rate Fluctuation, ARCH, Economic growth.

1. Introduction

Bangladesh, with a huge population and great potentials, is a country in south Asia. It may be difficult for Bangladesh to produce all of the necessities for this huge population and thus it is bound to go for foreign trade. As a result Bangladesh falls a victim of irrational exchange rate. Exchange rate can be defined as the ratio in which one country's monetary value is converted to others. The economic growth of any country can be affected by the exchange rate directly (rizzo, 1998).

A country's exchange rate involves the relative price of the goods produced for the domestic market but traded internationally (Nurkse, 1944). Domestic currency and foreign currency are the two components of

the exchange rate which can be quoted either directly or indirectly. Exchange rate systems are broadly divided in two categories: (i) fixed exchange rate system (decided by central banks of a country), and (ii) floating exchange rate system (decided by the mechanism of market demand and supply). The crawling peg system and currency board system are the two categories of the fixed exchange rate system. On the other hand, independent floating system and managed floating systems are the categories of the floating exchange rate system. In fixed exchange rate system countries peg i.e. attach its currency at a fixed rate to another currency or a basket of currencies, where the basket is formed from the currencies of major trading or financial partners and the weights given to the different currencies reflect the distribution of trade, services, or capital flows of the partner countries. The exchange rate of a currency change relatively freely follows certain rules and is determined by market forces of demand and supply in free floating exchange rate systems (Islam and Biswas, 2009).

Nowadays there is a comprehensive debate about the effect of exchange rate fluctuation on economic activity. An increase in the real exchange rate, a real appreciation, is likely to decrease competitiveness, increasing imports and decreasing the export. An appreciation of the real effective exchange rate is expected to worsen the trade balance (by reducing export and increasing imports) and the real depreciation is expected to improve it. A depreciation (or devaluation) of the domestic currency may stimulate economic activity through the initial increase in the price of foreign goods relative to home goods. By increasing the international competitiveness of domestic industries, the exchange rate depreciation diverts spending from foreign goods to domestic goods. The effect of depreciation can either be expansionary or contractionary. In judging the desirability of the exchange rate fluctuation, it becomes, therefore, necessary to evaluate their effects on output growth. Demand and supply channels determine these effects (Kandil, 2009).

Bangladesh switched to floating exchange rate system on May 31, 2003. Before this, there were various pegged exchange rate regimes like that - from1972 to 1979 (pegged to British pound sterling), from 1980 to 1982 (pegged to a basket of major trading partners' currencies with pound sterling as the intervening currency), from 1983 to 1989 (pegged to a basket of major trading partners' currency with US dollar as the intervening currency), and from 2000 to 2003 (an adjustable pegged system) (Hossain & Ahmed, 2009). The interbank exchange rate stood at

Tk 82.75 per dollar, up from Tk 82.70 and Tk 78.70 a year ago, according to the central bank. The taka has been depreciating against the dollar since the middle of October, 2017 (Uddin,).

Alexander (1952) illustrates the possibility that devaluation could lower the consumption component of aggregate demand. The inflationary effect of currency devaluation redistributes income from workers to producers. Since currency depreciation raises the cost of imported input, it contributes to an increase in the production cost and thus curtails the aggregate supply. If the reduction in aggregate supply more than offsets the increase in aggregate demand, depreciation will result in a decrease in domestic production. In this case, devaluation or depreciation is said to be contractionary. Otherwise, it could be expansionary (Bahmani-Oskooee and Kandil, 2010).

In this paper, firstly- it is tried to estimate the exchange rate fluctuation by using ARCH model, secondly- tried to find out its impact, either expansionary or contractionary, on economic growth of Bangladesh and determine the relationship among monetary policy, fiscal policy, exchange rate fluctuation and economic growth.

2. Literature Review

The traditional view indicates that currency depreciation is expansionary while the new structuralism school stresses some contractionary effects. Gylfason (1983) provided some support for expansionary devaluations, and Atkins (2000) encountered with contractionary effects of devaluation. The exchange rate fluctuation influences the country's export and import which brings about changes in the trade balance. Thus the economic performance of Bangladesh is affected by exchange rate fluctuation significantly (Agenor 1991). Hossain (2002) investigates the exchange rate responses to inflation in Bangladesh for the period 1973-1999 and finds that during the fixed exchange rate regime inflation were not significantly affected by devaluation.

Miteza (2006) finds that there is a positive effect of real appreciation on the economic growth in Bulgeria for most of the period 1992-2004. Rahman and Barua (2006) attempted to analyze the causes and impact of the recent developments in the foreign exchange and money markets of Bangladesh using the data of FY05 and FY06. They observed that depreciation depends on various components of the foreign exchange market.

Mohammed and Biswas (2009), examine the Exchange Rate and its Impacts on GDP and Inflation in Bangladesh. They compare the economic track records of the two different exchange rate regimes the "Fixed Exchange Rate" and the "Free Floating Exchange Rate System" in maintaining economic performance. They also consider relationships between exchange rate and Inflation and between exchange rate and GDP in Bangladesh.

Khondker, Bidisha, Razzaque (2012) have conducted a study on The Exchange Rate and Economic Growth: An Empirical Assessment on Bangladesh. This study has made an attempt to examine the effects of exchange rate changes on Bangladesh's aggregate output, measured by GDP. They concluded that in the short run, the impact of devaluations is likely to be contractionary. Saqib and Sana (2012), examined the effect of exchange rate volatility on export in Pakistan. They revealed that Pakistan's export is inversely affected by real exchange rate. Aziz (2012) explores the impact of real devaluation on the trade balance in Bangladesh during the period 1976-2009 and finds a significantly positive impact of the REER devaluation on the trade balance.

The effects of the REER on specific types of exports are examined by Cheung and Sengupta (2012). Their study explores the effects of the REER on the share of exports of Indian non-financial sector firms for the period 2000 to 2010. The empirical analysis reveals that firms with small export shares are more affected by the real effective exchange rate fluctuations.

Akther, Sarker, & Saidjada (2013) investigate the probable reasons behind sharp depreciation of Bangladesh Taka (BDT) against US dollar (USD). They find that the demand shocks are more effective than supply shocks in exchange rate fluctuations. They also find that during 2004 to 2006 and 2010 to 2012 the money supply shock has a negligible effect on the depreciation of BDT.

Uddin, Quosar, & Nandi (2013) estimate the impact of depreciation on domestic price level on Bangladesh. They find a positive association between exchange rate and average inflation rate. Kamal (2014), examined the effect of currency devaluation on major export items and find that export decreases for currency devaluation. Younus and Chowdhury (2014) estimated the impact of real exchange rate depreciation on Bangladesh's exports, imports and trade balance. The result shows that both in the short and long run the real exchange rate has an important

impact on export, import and trade balance. But the empirical results do not find any significant relation among the variables (REER, trade balance, imports and exports).

Hassan, Chakraborty, Sultana and Rahman (2016) examined the effects of real effective exchange rate on real export earnings in Bangladesh. They found that in the long run REER has a significant effect on export but in the short run it has no effect.

There are many papers that examined the sources of exchange rate and impact of exchange rate only on price level or export or import of different countries including Bangladesh.

Thus, this paper intends to estimate the exchange rate fluctuation by using ARCH model, testing either it is contractionary or expansionary and its impact on the economic growth of Bangladesh. The sample size and types of data, used in this paper, are also different from the mentioned studies.

3. Theoretical Framework

According to the model in Kandil and Mirzaie (2002) a theoretical prediction is established here. Where, a modified IS-LM equation is used to enumerate the demand side of an open economy.

$$Y = C + I + G + X - M$$

$$S = Id + If$$

$$S = S(Y, r); \frac{\partial S}{\partial Y} > 0, \frac{\partial S}{\partial r} > 0$$

$$I_d = I_d(Y, r); \frac{\partial I_d}{\partial Y} > 0, \frac{\partial I_d}{\partial r} < 0$$

$$I_f = I_f(Y, e); \frac{\partial I_f}{\partial Y} > 0, \frac{\partial I_f}{\partial e} > 0 \ I_{fY} < 0, \ I_{fe} > 0$$

Where, total expenditure, consumption expenditure, domestic investment expenditure, savings, government spending, net exports or foreign investment (If), domestic interest rate and exchange rate are represented respectively by Y, C, I, S, G, X-M, r, and e (Rhodd,1993). It is a function of the exchange rate, the domestic price level, the foreign price level, and the domestic interest rate. This is the IS equation that explains the relationship between the real income and the real interest rate. Real disposable income has a positive impact on Real consumption expenditure. Real investment expenditure is negatively affected by the real interest rate. If income level abroad increases and to relative prices then an

autonomous element also accelerates which is associated with real export. When the price of domestic goods is lower relative to the foreign price, exports will rise and on the contrary real imports will rise if the foreign price diminishes relative to domestic goods. It is assumed that Real government spending is exogenous. The trade balance will increase if nominal devaluation occurs.

Money market Equilibrium can be achieved by equating the real money demand and supply. Monetary policy determines Money supply and on the other hand income and interest rate determine money demand.

Ms = Md

$$M_d = L (Y, r); L_y = \frac{\partial M_d}{\partial Y} > 0; L_i = \frac{\partial M_d}{\partial r} < 0$$

The equilibrium condition in the money market determines the LM equation that sets a positive relationship between real income and the real interest rate. By solving the LM equation and substituting the result into the IS equation results in the equation for aggregate demand.

On the supply side, output is produced using a production function that combines labor, capital, and imported intermediate goods. The cost of intermediate goods from abroad increases and the demand for these goods decreases if the currency depreciates (or is devalued). When the nominal wage relative to workers' expected price raises then labor supply also increases. An output price surprise has a positive effect on Aggregate supply and it also increases if expected real wage rises and stimulates employment. Aggregate supply responses negatively with the domestic price of foreign currency

The association of demand and supply channels represents that real output depends on movements in the exchange rate, the money supply, and government spending. Exports demand, supply of tradable will decrease and imports demand will increase for a momentary currency appreciation. The output supply can rise for a lower cost of imports in the short-run. But in the long-run producers may increase or decrease the output supply that depends on the relative potency of the competitiveness and cost channel.

4. Model and Methodology

In the perspective of the theoretical predictions here it is tried to study the impact of currency depreciation on domestic output using an empirical model that replicates the reduced-form solution of the theoretical model in Kandil and Mirzaie (2002) as follows.

Following Bahmoni-Oskooee (2010) a simple equation is examined:

$$\text{Ln GDP}_t = w + x \, \text{Ln G}_t + y \, \text{Ln M}_t + z \, \text{LnREV}_t + \varepsilon_t$$

Here, Ln for the natural logarithm of variables and t for time series data. Real output is represented by GDP_t. It can vary by three policy variables such as money supply, real government expenditure and real exchange rate fluctuation. Monetary policy (approximates) and fiscal policies are measured by M_t, log of money supply and G_t, real government expenditure respectively. The real exchange rate fluctuation is denoted by REV_t. Other fluctuations in real output growth is measured by $\varepsilon_{t..}$

If the estimated values of x and y are positive then it would indicate that expansionary fiscal and monetary policies could boost real output growth in the long-run. The positive value of z would indicate that an increase in real exchange rate fluctuation leads to expansionary effect while the negative value of z leads to contractionary effect. All the data are expressed in logarithms in order to include the proliferate effect of time series and reduces the problem of heteroscedasticity.

According to Montiel, RER = NER. Pf /Pd Where, NER is nominal exchange rate, P f foreign (US)price level , P d domestic (BD) price level. In this study, real exchange rate is find out by this formula and then using ARCH model (Auto Regressive Conditional Heteroscedasticity process, which is expected to capture mainly the dynamic behavior of conditional variance using lagged disturbance, proposed by the Engle, 1982) measures the real exchange rate fluctuation by creating a new variable.

4.1 Unit root test

In the empirical studies of time series analyses stationary time series is considered as if the series is non-stationary, the relationship between independent and dependent variables may exhibit misleading inferences which lead to spurious regression. A series is said to be stationary if mean and auto-covariance of the series do not depend on time. In order to examine whether each variable in the time series is integrated and has a unit root, this study has considered, Augmented-Dickey-Fuller test, widely used popular unit root test. The test uses the null hypothesis that the series does contain a unit root (non-stationary variable) against a stationary variable in the alternative hypothesis. The test is based on the following regression equation:

$$\Delta Y_t = \beta 1 + \beta 2 + \alpha Y_{t}\text{-}1 + \Omega i \sum\nolimits^{m}_{i\_1} \Delta Y_t\text{-}1 + u_i$$

Where, $\Delta Y_t = Y_t - Y_{t-1}$ and Y is the variable under consideration, m is the number of lags in the dependent variable and u_i is the stochastic error term. The null hypothesis of a unit root implies that the coefficient of y_{t-1} is zero.

4.2 Co-integration Test

In order to examine the co-integration test it is necessary that the variable of time series analysis must be integrated in the same order. The co-integration test is required to examine the existence of a stable long-run relationship between economic growth, money supply, government expenditure and exchange rate fluctuation. For testing the co-integration use Engle–Granger (EG) or Augmented Engle–Granger (AEG) Test is used here. At first the integration between the variables are established and then Ordinary Least Square (OLS) is used to calculate the residuals. If the variables such as Ln GDP (Natural Log GDP), Ln GE (Natural Log of Government expenditure), Ln MS (Natural Log Money supply), Ln REV (Natural Log of Real exchange rate fluctuation) are integrated in the same order then they are co-integrated.

To verify co-integrated relationship among the variables, Johansen-Juselius Co-integration test has been performed. Trace test and Maximum Eigen (two types of test statistics) are used to verify the co-integrated vectors. These are -

$\lambda max = -t \ln(1-\lambda r+1)$…………………………..1

$\lambda trace = t\sum^m_{i\_r-1} \ln (1- \lambda_i)$…………………….2

The trace test requires that the co-integrating vector is either equal or less than r+1, whereas r+1 is hold for the maximum eigen value test an In the max statistic alternative roots which are r, r+1should be tested. Where r+1 will be tested to verify it is rejected or not in favor of r root.

4.3 Granger Causality Test

In order to find the casual relationship between two variable, suppose Z (ln M, ln G, ln REV) & Y (ln GDP), the granger causality test is used here. The test is solitary based on time series .if Z provide a significant information about the future value of y , z assist to prescribe y. That means, Z is said to granger cause of y.In both time, y is stationary before & after containing information the prediction of value. For prediction following regressions are used-

$$Y_t = \delta + \sum^m_{i\_1}\beta_i\ Y_{t-1} + \sum^n_{i\_1}\lambda_i\ Z_{t-1} + u_i\text{………………}1$$

$$Z_t = \kappa + \sum_{i=1}^{m} \mu_i Z_{t-1} + \sum_{i=1}^{n} \omega_i Y_{t-1} + v_i \ldots \ldots \ldots \ldots \ldots 2$$

Both equations represent Present Values of any one of the variables are related to the past values of itself and another variable.

4.4 Source of Data

For this study, the annul data of GDP, Government expenditure, Money supply (broad money, M2) and Real exchange rate (nominal exchange rate, GDP deflator of USA and Bangladesh) has been taken from the World Development Indicators, covering the period 1975-2015 for Bangladesh.

5. Result Analysis

The results are obtained by using econometric software EViews version 7. The result of unit root test based on the Augmented Dickey Fuller (ADF) tests demonstrates the levels and first difference of the individual variables.

Table 1: ADF test on economic growth, government expenditure, money supply and real exchange rate fluctuation (Bangladesh: 1975-2015)

Variables	Augmented Dickey Fuller (Intercept)		Augmented Dickey Fuller (Trend and Intercept)		order of Integration
	Level	1st Diff.	Level	1st Diff.	
L_GDP	3.734692	-5.627413***	0.544739	-8.340130***	I(1)
L_GE	-0.919098	-5.65092***	-2.576786	-5.542078***	I(1)
L_MS	-1.056375	-5.795483***	-3.247747	-5.649713***	I(1)
L_REV	-6.35971***	-7.698290***	-6.434388***	-7.593577***	I(1)

Notes: ***, ** and * indicate rejection of the null (variables are unit root/ non stationary) at the 1%, 5% and 10% level respectively

The results of unit root test, ADF, indicate that at first differences of the variables economic growth (L_GDP), Government Expenditure (L_GE), Money supply (L_MS)and Real exchange rate fluctuation (L_REV) are statistically significant at 1% significance level. Since, 1st degree differentiation produces stationary, the variables – L_GDP (Gross Domestic Product), L_GE(Government Expenditure), L_MS. (Money Supply) and L_ REV (Real Exchange rate fluctuation) - are integrated of order one - I(1).

Now this paper can use the tests whether they are co-integrated or not (Table 2). The Johansen test statistics show rejection for the null hypothesis of no co-integrating vectors under both the trace and maximal Eigen value forms of the test.

Unrestricted Johansen Co-integration Rank Test (Trace)

Table 2: Output for Eigen Value Test and Trace Statistics (Bangladesh: 1975- 2015)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	P-value**
None *	0.639929	81.48243	47.85613	0.0000
At most 1*	0.426238	41.64574	29.79707	0.0014
At most 2*	0.284263	19.97963	15.49471	0.0098
At most 3*	0.162937	6.936388	3.841466	0.0084

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

 * denotes rejection of the hypothesis at the 0.05 level

 **MacKinnon-Haug-Michelis (1999) p-values

In case of the trace test, the null of no co-integrating vectors is rejected since the trace statistic of 81.48243 is greater than the 5% critical value of 47.85613. Like this, the null hypotheses of the existence of at most 1 co-integrating vectors, at most 2 co-integrating vectors and at most 3 co-integrating vectors are rejected at 5% as the trace statistics are greater than the 5% critical value. From this table it can be said that the above results indicate the existence of four co-integrating equation among the variables in the series.

Table 3: Unrestricted Co-integration Rank Test (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistics	.05 Critical Value	P-Value**
None *	0.639929	39.83669	27.58434	0.0008
At most 1*	0.426238	21.66611	21.13162	0.0420
At most 2	0.284263	13.04324	14.26460	0.0773
At most 3*	0.162937	6.936388	3.841466	0.0084

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

 * denotes rejection of the hypothesis at the 0.05 level

 **MacKinnon-Haug-Michelis (1999) p-values

In case of the maximum eigenvalue test statistic, the null of no co-integrating vectors is rejected since the test statistic of 39.83669 is greater than the 5% critical value of 27.58434. Moving on to test the null of at most 1 co-integrating vectors, the maximum eigenvalue statistic is 21.66611, while the 5% critical value is 21.13162, so that the null hypothesis is not rejected at 5%. Moving on to test the null of at most 2 co-integrating vectors, the maximum eigenvalue statistic is 13.04324, while the 5% critical value is 14.26460, so the null hypothesis is not rejected at 5%. Finally, Moving on to test the null of at most 3 co-integrating vectors, the maximum eigenvalue statistic is 6.936388, while the 5% critical value is 3.841466, so the null hypothesis is rejected at 5%. From the table, max-eigenvalue test results indicate the existence of at least two co-integrating equations among the variables in the series at 0.05 level.

Table 4: Shows the values of the normalized co-integrating coefficients

Long-run impact of Government expenditure, Money Supply and square of Real exchange Rate on Economic Growth of Bangladesh (1975 – 2015)		
Variables	Normalized co-integrating coefficients	Standard Error
L_GE (Government expenditure)	-0.825601***	0.12985
L_MS (Money Supply)	-0.142725	0.07220
L_REV (Real Exchange Rate Fluctuation)	0.052632**	0.18560
Notes: ***, ** and * indicate coefficients are statistically significant at the 1%, 5% and 10% level respectively based on the magnitude of the p-values		

The co-integration relationship that indicates the long-run relationship among the variables can be estimated as follows:

L_GDP= -0.825601 L_GE -0.142725 L_MS + 0.052632 L_REV

According to the above normalized equation, the values of the normalized co-integrating coefficients indicate that in the long run Government expenditure and Money supply have got a positive effect on the economic growth but Real exchange rate fluctuation has a negative impact on the growth of Bangladesh. Since the value of z is negative the effect of real exchange rate fluctuation is contractionary.

Granger causality test for ln GDP, ln GE, ln MS, & ln REV

Here the following table represents the results of Granger causality among the variables

Granger Causality Test :

Null Hypothesis:	Obs	F-Statistic	Prob.
LNM does not Granger Cause LNGDP	40	0.05647	0.8135
LNGDP does not Granger Cause LNM		14.5135	0.0005
LN TOTAL EXPENDITURE does not Granger Cause LNGDP		0.30590	0.5835
LNGDP does not Granger Cause LN TOTALEXPENDITURE	40	14.0152	0.0006
Ln REAL EXCHANGE RATE FLUCTUATION does not Granger Cause LNGDP		0.00924	0.9239
LNGDP does not Granger Cause Ln REAL EXCHANGE RATE FLUCTUATION	40	1.09659	0.3018
LN TOTAL EXPENEDITURE does not Granger Cause LNM	40	0.01853	0.8925
LNM does not Granger Cause LN TOTALEXPENDITURE		4.14569	0.0489
LN REAL EXCHANGE RATE FLUCTUATION does not Granger Cause LNM		0.11533	0.7361
LNM does not Granger Cause Ln REAL EXCHANGE RATE FLUCTUATION	40	1.18847	0.2827
Ln REAL EXCHANGE FLUCTUATION does not Granger Cause LNTOTALEXPENDITURE		0.00847	0.9272
LNTOTALEXPENDITURE does not Granger Cause Ln REAL EXCHANGE RATE FLUCTUATION	40	1.23368	0.2739

If the probability values are greater than 0.05 at 5% level of significance and f statistics are not rejection area that means null hypothesis will be accepted. The null hypothesis will be only rejected when the probability value is less the 0.05 at 5 % significance level and shows a causal relationship between the variables. From the above table, LnGDP has a causal relationship with LnM, probability (0.0005) and Ln Total Expenditure, probability (0.0006). On the other hand, LnM has a causal relationship with Ln Total Expenditure with probability (0.0489).

6. Conclusion

In this paper exchange rate fluctuation is calculated by creating a new variable, real exchange rate fluctuation (REV), from real exchange rate

using ARCH model. After testing stationary in data, impact of exchange rate fluctuation, government expenditure and money supply on economic growth is examined. The estimated result shows that if government expenditure and money supply are increased by 1% then GDP increases by 0.83% and 0.14% respectively. On the other hand, if real exchange rate fluctuation increases by 1% then GDP decreases by 0.053%. The negative value of the coefficient associated with exchange rate fluctuation indicates that the effect of currency depreciation in Bangladesh is contractionary. For some reasons indirect costs of devaluation can actually outweigh its benefits negatively affecting the overall growth of output. Firstly, aggregate demand and output may decreases as price of traded goods rises for devaluation which leads to a negative real balance effect. Secondly, aggregate demand may also fall as income is redistributed from the people with high marginal propensity to consumption to high propensity to save. Finally, production and output may decrease if cost of imported inputs increases. Here, it is also found out that there is no bi-directional relationship between the variables but variables have the unidirectional relationship.

Based on this study, it can be said that the exchange rate needs to be managed efficiently as it is very important for external sector competitiveness and easiness to perform extensively. For this, the government needs to take appropriate steps. It can be easier by implying effective fiscal and monetary policy. It is needed to impel a fragile balance between maintaining a sustainable trade balance and assuring output growth. The activity for the growth of an economy requires accelerating the capacity of central bank's to ingest shocks and avert rapid depreciation.

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The Impact of the Interest Rate and the Exchange Rate on the Current Account Balance in Bangladesh: A Time Series Analysis

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Abstract

Balance of payment plays a significant role on a country's economy. If the current account balance of a country is positive, the country becomes a net lender to the rest of the world and vice-versa. This paper investigates the relationship of exchange rate and real interest rate on the current account balance in Bangladesh. The study performs advanced econometrics techniques on time series data from the period 1976 to 2016. There is no multicollinearity among the explanatory variables in the model. The stationary of data is checked by using Augmented Dickey-Fuller (ADF) unit root test. The results of this study indicate that in the long run, Exchange Rate has a positive and Interest Rate has a negative impact on Current Account Balance in Bangladesh. The result of vector error correction (VECM) model indicates that all the variables will be in equilibrium after some error correction. The findings of the impulse response function show that in a very few cases the external shocks have been neutralized for a certain period of time but in most cases the external shocks have not been neutralized. The government should keep an eye on the real interest rate and the exchange rate to improve the current account balance of the economy.

Keywords: Current Account, Interest Rate, Exchange Rate, Augmented Dickey Fuller, Impulse Response

1. Introduction

The balance of payment is a summary statement in which all the transactions of the resident of a nation with the residents of all other nations are recorded during a particular period of time, usually a calendar year. The main purpose of the balance of payment is to inform the government of the international position of the nation and to help in its formulation of fiscal, monetary and trade policies. The balance of payment has three components which are the Current Account, the Capital Account

and the Financial Account. The Current Account measures the international trade, net income on investment and direct payment. The Financial Account keeps the records of the changes in the international ownership of assets and the Capital Account records any financial transaction that does not affect economic output. International transactions are classified as credits or debits in the balance payment account. Credit transactions mean home country's claims on the foreigners that involve the receipt of payments from foreigners. Debit transactions means foreigners claims on us that involve payments to foreigners. The export of goods and services, unilateral transfer from foreigners and capital inflow are credits and are entered with a positive sign. The import of goods and services, unilateral transfers to the foreigners, and capital outflows are debits and are entered with a negative sign. The exchange rate is the price of home currency in terms of foreign currency. If the home currency's value increases, it means that the same amount of home currency is now able to purchase more foreign currency and vice versa the exchange rate has a significant role to influence the current account of the balance of payment. An appreciation of home currency makes the domestic goods and services expensive to the foreigners which ultimately influences the home country's current account balance and vice versa. The real interest rate is the nominal interest rate adjusted for inflation. In the theory of economics, interest rate is defined as the value that is gained in the effort of a value that is invested or saved. The real interest rate has also the role to influence the balance of payment accounts.

Bangladesh experienced a current account deficit until 1991 and after that it has ups and down trend but Bangladesh experienced a current account surplus after 2011 (World development Indicators 2016). The exchange rate has a rising trend over the years.

Although the real interest rate has fluctuating trend but real interest rate is positive after the year 1996 (WDI 2016). However, the current account balance is influenced by the official exchange rate and real interest rate. Therefore, in our research paper we intend to investigate the long run impact of the official exchange rate and the real interest rate on the current account balance of Bangladesh. The study has the following specific objectives

i. to investigate whether there exists any long run relationship between the current account balance with the official exchange rate and the real interest rate.

ii. to explore whether there exists any causal relationship between the examined variables.

iii. to examine the external shocks on the variables .

2. Theoretical Background

There are different types of theories regarding the current account balance and the exchange rate as well as the current account balance and the real interest rate. This study mainly discusses two important theories namely neoclassical and monetarist theories of balance of payment. Both the theories focus on monetary factors in the determination of balance of payment but they take different approaches.

2.1 The Monetary Approach of Balance of Payment

The monetary approach of balance of payment holds that the balance of payment disequilibrium can be explained by disequilibrium in money supply and demand for money in the economy. According to this approach, an increase in the price level as a result of nominal depreciation of domestic currency may reduce the real money supply. The decrease in real money supply will in turn lead to the reduction in spending and improve the trade balance.

2.2 The Marshal Learner Condition

The Marshal Learner Condition (M-L) is a special case of neoclassical elasticity approach. It is mainly based on two assumptions. First, there exists infinite elasticity of supply of all goods in the market which means that domestic and foreign prices of all goods and their substitutes are constant. Second, consumption of all goods is constant meaning that fluctuation of the foreign exchange rate affects demand. According to Marshal Learner condition, real exchange rate depreciation may potentially improve the current account balance if and only if price elasticity for the demand of imports and of the demand for exports exceeds unity in absolute terms (Mudida et al. (2012), Wanjau, 2014).

2.3 The Mundell-Fleming Model with Flexible Exchange Rate

The Mundell-Fleming model (Mundell-Fleming, 1963) is the standard macroeconomic model that describes how GDP, the balance of payment, the exchange rate and interest rates interact with each other. According to this model, an increase in government expenditure puts an upward pressure on the domestic interest rate which in turn invites a massive capital inflow. This appreciates the nominal exchange rate as well as the

real exchange rate which worsens the trade balance and vice versa. On the other hand, an increase in money supply puts a downward pressure on the domestic interest rate which in turn invites a massive capital outflow. This depreciates nominal exchange rate as well as real exchange rate which in turn improves the trade balance and vice versa.

3. Literature Review

De Simone (1997) noticed macroeconomic variables like government spending, budget balance, productivity, domestic and foreign income, real interest rates, and terms of trade interpreted US current account in a good manner and disclosed that rise in real interest rates and budget deficits raises the current account deficits. Makin (2002) noted that the exchange rate fluctuation in short-run based on comparative movements in demand and supply for currencies emerges from external transactions. In the long-run the exchange rate is determined by purchasing power parity (PPP), which connects relative price levels and inflation rates to movements in the nominal exchange rate. Higher inflation led to currency depreciation and in long-run PPP could be viewed as tool to observe the overvalued or undervalued of the nominal exchange rate. Boileau and Normandin (2004) were interested in aggregate behavior of the output, the current account, and the interest rate differential at the business cycle. For this the researchers used a small open economy model in which agents had access to financial markets of the world, but encountered country-specific interest rates on their holdings of world assets. In that framework the interest differential counts negatively on the country's net foreign asset position. Lee and Chinn (2006) mentioned the perpetual shock had an immense long-term impact on the real exchange rate but low impact on current account while transitory shock had an immense impact on the current account and the exchange rate in short-term but not in long-term. Aziz (2008) concluded that real effective exchange rate (REER) had a positive significant impact both on the short and long run in trade balance of Bangladesh and also investigated Marshall-Lerner condition and confirmed that J-curve ideal is appropriate in action of the exchange rate depreciation. Hossain (2008) reported a positive impact of FDI inflows on the current account as well as Balance of Payment in Bangladesh. Banerjee and Adhikary (2009) found a net negative feedback from the exchange rate to stock market in short run meaning that the exchange rate and the stock market are nearly independent.

Tan (2010) investigated the role of the exchange rates in fighting with the trade deficit concentrating on Japan's experience with the US. The researcher referred that focusing on the current account surplus or deficit was not enough to narrate if a currency is overvalued. With a view to investigating the effect of the exchange rate and savings (private and public) on the current account balance of Turkey Uz (2010) emphasized that the exchange rate had the greatest influence on the current account and the twin deficit was supported by the study. Fratzscher et al. (2010) for the US current account equity market and housing price shocks recognized as vital determinants accounted 32% where the exchange rate shocks accounted less than 7% meaning exchange rate fluctuation may not be the principal factor for the current account imbalances rather asset price may be a powerful source of adjustment. Oladipupo (2011) employing the OLS method from 1970 to 2008, study found a significant effect of the exchange rate on the Nigeria's balance of payments. Muktadir-al-Mukit (2012) established an investigation about the impact of the exchange rates and interest rates on stock market performance by using monthly time series data from 1997 to 2010 and expressed that a 1% increase in the exchange rate and in interest rate leads to a 1.04% rise and 1.71 % fall in the market index respectively and also confirmed an unidirectional causality among them. Chowdhury and Hossain (2014) using the Inflation rate, the GDP growth rate, the interest rate and the current account balance as independent variables, the study arrived at a decision that the inflation rate, the GDP growth rate, the interest rate and the current account balance had a positive effect on the exchange rate where the majority rule was performed by the GDP. Iyoboyi and Muftau (2014) referred to the bidirectional causality between BOP and other selected variables. The IRF (impulse response function) showed that a shock on exchange rate lowers positive BOP in the medium and long term, where the findings of the variance decomposition suggested that a significant variation in BOP was not caused by the exchange rate movements in Nigeria. Wanjau (2014) from Keyna wanted to find out the impact of real exchange rate change on current account balance and whether the import growth rate is compatible with the consistent economic growth. Findings supported the Marshal-Lerner-conditions and the J-curve phenomena hold for Kenya and a significantly higher import growth rate than the balanced long-term growth.

Mochtar and Affandi (2015) analyzed the role of permanent and temporary elements in influencing the current account and the real exchange dynamics before and after 2000 of Indonesia. Results disclosed that permanent shocks were the main reasons for the movement of the behavior of the real exchange rate after 2000 and before 2000 temporary shocks were dominant for the changing pattern of the real exchange rate. But the change in the exchange rate behavior did not affect the dynamics of the current account after 2000, rather nominal variables were accounted for the current account surplus after 2000.Romelli et al. (2015) investigated the influence of trade openness on current account and the real exchange rates relationship for the period 1970 to 2011. Results revealed that a smaller exchange rate depreciation in more open economies led to an improvement in the current account and the trade balance. Through threshold cointegration and asymmetric error correction modeling Aliyu and Tijjani (2015) investigated the relationship between exchange rates and the trade balance and concluded the existence of non-linear cointegration between the variables. Kariuki (2015) told interest rates negatively affect the real exchange rate, about 45% change in real exchange rate occur due to a change in the real interest rate. From a comparative study of the balance of Payment (BOP) of two countries named Pakistan and India Shafi et al.(2015) investigated the effect of the inflation rate, interest rate and the foreign exchange rate on BOP and revealed that for both the countries inflation and the foreign exchange rate had a positive effect whereas the interest rate had a negative impact on BOP. Banday and Aneja (2016) questioned the validity of the twin deficit hypothesis and the utilizing cointegration and granger causality for the period 1990-2013, and the study concluded that the twin deficit hypothesis exists in the Indian economy.

Ousseini et al. (2017) considering time from 1980 to 2013 examined the impact of the real exchange rate, income, money supply (M2), inflation, investment and house-hold consumption expenditure on the trade and current account balance. The study revealed a negative significant relationship between money supply, investment and current account balance while a positive significant impact of the real exchange rate, income, inflation, and household consumption expenditure on the current account balance was found. Moreover Marshall-Lerner condition holds for WAEMU as suggested by the significance of the exchange rate impact on the trade balance.

Khalid (2017) examined the impact of interest rates and exchange rates on stock market performance of Pakistan using time period 1990-2017. Applying cointegration approach, the result revealed that a 1% increase in the interest rate and in the exchange rate led to a 0.23% fall and 3.17% rise in market capitalization, respectively as well as a unidirectional causality running from the foreign exchange rate to the interest rate. Ibrahim et al. (2017) taking data from 1970 to 2012 researchers from Nigeria explored the impact of the exchange rate on the trade balance and concluded a findings which was contrary to the J- curve hypothesis that is the exchange rate had an inverse relationship with the trade balance.

After reviewing the available literatures, the study found that very few researches on this topic have been performed in Bangladesh where limited econometric tools were applied. However this study has applied various types of econometrics tools and long span of time series data to analyze the results. Therefore, this study is reliable and adds more information to the existing works.

4. Data and Methodology

Data

The study particularly relies on the secondary data of Bangladesh from 1976 to 2016. Data on the current account balance, official exchange rate and real interest rate are taken from the World Development Indicators database. Data on the official exchange rate and the current account balance are transformed into logarithms to achieve the uniformity and proliferate effect of time series and reduce the problem of heteroscedasticity. Econometric results based on the dataset have been obtained by statistical package STATA 12 and Eviews 9.5.

Methodology

The present study is concerned with the identification of the short run and the long run impact of the official exchange rate and interest rate on the current account of balance of payment in Bangladesh. To examine the dynamic linkage among variables the study makes use of Vector Autoregressive (VAR) modeling. The long run equilibrium relationship is examined using Johansen and Juselius (1998) co integration test. The study also tried to examine the nature of causality among variables under the study by employing Granger Causality test. Finally, an impact of external shocks to the restricted VAR model has been shown by Impulse Response Function (IRF) analysis.

4.1 Testing for Integration: The Unit Root Test

The study takes unit root test in the time series variables by applying the ADF method.

The ADF test estimates the following general regression

$$\Delta Y_t = \alpha_1 + \alpha_2 + \beta\, Y_{t-1} + \Omega_i \sum_{i=1}^{m} \Delta Y_{t-1} + \eta_i \ldots\ldots\ldots\ldots(i)$$

Where, $\Delta Yt = Yt - Yt\text{-}1$ and Y is the variable which is in consideration and m represents lag of the dependent variable with the Akaike Information Criterion and η_i represents stochastic error term. The ADF technique tests the hypothesis of $\Omega=0$, meaning that the series is a unit root, series is non stationary. If the null hypothesis is rejected at some level of significance (usually at 5% or 1%) then we can conclude that the series is stationary.

4.2 The Cointegration Test

Engle and Granger (1987) first discussed the idea for cointegration showing that time series data involving I(1) can be meaningful. They showed that if two or more series are individually integrated in some order, but some linear combination of them has an integration, in that case the series are called cointegrated. There are two statistics for cointegration under the Johansen approach, which are formulated as

$$\lambda_{trace(r)} = -T \sum_{i=r+1}^{g} \ln(1 - \hat{\lambda}_i) \qquad\ldots\ldots\ldots\ldots\ldots.(ii)$$

and

$$\lambda_{\max(r,r+1)} = -T \ln(1 - \hat{\lambda}_{r+1}) \qquad\ldots\ldots\ldots\ldots (iii)$$

Where r is the number of the cointegrating vectors under the null hypothesis and λi is the estimated value for the ith recorded Eigen value from the matrix. Intuitively, the larger is λ_i, the much more large and negative will be $\ln(1\text{-}\lambda_i)$ and hence the larger will be the test statics. There is an association between each Eigen value with its cointegrating vector called Eigenvectors. A significant non zero Eigen value indicates a significant cointegrating vector.

λ_{trace} is a joint test with the null hypothesis that the number of cointegrating vector is less or equal to r against an alternative that there are more than r. It starts with p Eigenvalue, and then successfully the largest is removed.

$\lambda_{trace}= 0$ when all the $\lambda_i=0$ for i = 1…..g.

λ_{max} conducts separates tests on each eigenvalue, and has as its null hypothesis that the number of cointegrating vector is r against an alternative of r+1.

4.3 Granger Causality Test

The granger causality test for two time series, Y_t and X_t involves running the following models : $Y_t =\delta+ \sum_{i}^{I+r} \alpha_{1t} y_{t-i} + \sum_{i}^{I+r} \beta_{1t} x_{t-i} + \mathcal{E}_{1t}$ ……………..(iv)

$X_t =\delta+ \sum_{i}^{I+r} \alpha_{2t} x_{t-i} + \sum_{i}^{I+r} \beta_{2t} y_{t-i} + \mathcal{E}_{2t}$ …………….(v)

Where r represents the order of integration and α and β are the coefficients of the variables and $\mathcal{E}_{1t}$ and $\mathcal{E}_{2t}$ are the white noise error term. The null hypothesis of the test is that the lagged value of one variable does not cause the other against the alternative of causality running from one to another.

4.4 Impulse Response Function

Impulse Response Function portrays how changes in one variable resulting from an external shock affect the other variables through time. Taking into account the bivariate framework of the preceding two equations, the IRF equation can be written as

$\boldsymbol{\Omega} =\boldsymbol{\phi}_i B^{-1} \boldsymbol{\Lambda}^{1/2}$……………………………. (vi)

Where B^{-1} is the coefficients matrix of all the variables at time t, $\boldsymbol{\Lambda}^{1/2}$ denotes lower Cholesky decomposition of the variance –covariance matrix of μ_i, and $\boldsymbol{\phi}_i$ represents another matrix that shows the effects of a one unit increase in error term at date t (μ_t) on the value of the other variable at time t+s.

5. Result Discussion

This section outlines the results of different time series models that the study aimed to interpret. It starts with unit root test, then cointegration test, after then VECM and finally impulse response function.

Table 1: Augmented-Dickey-Fuller (ADF) test result

Variables	ADF(Intercept)		ADF(Trend and Intercept)		Order of Integration
	Level	1st Diff	Level	1st Diff	
LnCAB	-4.39826***	-8.19346***	-5.14076***	-8.10835***	I(1)
LnE	-2.00006	-3.92070***	-2.00006	-5.14927***	I(1)
IR	-3.80268***	-9.31351***	-3.80696**	-9.20029***	I(1)

Note: ***is 1% level of significance, ** is 5% level of significance, and * is 10% level of significance.

Table 1 shows that all the variables are stationary at first difference at 1% level of significance in case both with trend and without trend. Therefore it can be said that the time series under consideration are integrated of order one i.e. I (1).

Cointegration:

Since the variables are integrated of first Difference, i.e. I (1), now this paper tests whether they are co-integrated or not (Table 3). The Johansen test statistics show a rejection for the null hypothesis of no co-integrating vectors under both the trace and maximal Eigen value forms of the test.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Maximum rank	Eigen value	Trace statistic	Critical value 0.05	Prob**.
None *	0.637870	63.49737	29.79707	0.0000
At most 1 *	0.362827	23.88304	15.49471	0.0022
At most 2 *	0.149279	6.305176	3.841466	0.0120

* denotes rejection of the hypothesis at the 0.05 level

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level as the trace statistic value is greater than the critical value for all cases. In the long run all the variables are cointegrted since equations are cointegrted.

Table 3: Unrestricted Cointegration Rank Test (Maximum Eigen Value)

Maximum rank	Eigen value	Max-Eigen statistic	Critical value 0.05	Prob.
None *	0.637870	39.61432	21.13162	0.0001
At most 1 *	0.362827	17.57787	14.26460	0.0144
At most 2 *	0.149279	6.305176	3.841466	0.0120

* denotes rejection of the hypothesis at the 0.05 level

The Maximum Eigen value test indicates 3 cointegrating eqn(s) at the 0.05 level as the trace statistic value is greater than the critical value for all cases. In the long run all the variables are coingrated sine equations are cointegrated.

Long-run impact of Exchange Rate (LNE) and Interest Rate (IR) on Current Account Balance (LCAB) in Bangladesh (1976-2016):

Table 4: Normalized Cointegrating Coefficients

Cointegrating equation(s)	Coint Eq[1]	SE	t statistics
LnCAB	1.000000		
LnE	-1.642108	(0.29919)	5.4885123***
IR	0.240487	(0.02901)	8.289796***

The values of the normalized co integrating coefficient indicate that in the long run exchange rate has a positive significant impact and interest rate has a negative significant impact on the current account balance in Bangladesh. In the long run 1% increase in the exchange rate will improve the current account balance by 1.642108% but 1% increase in the interest rate will deteriorate current account balance by 0.240487%.

Vector Error Correction Model (VECM):

From the earlier discussion it has been observed that the series are cointegrated, so we may proceed with Vector Error Correction (VECM) model to examine the causality among the variables.

Table 5: Vector Error Correction Estimates (Speed of Adjustment)

Cointegrating Equation(s)	Coint Eq1	SE	t statistics
D(LnCAB)	-0.509018	(0.23645)	[-2.15277]
D(LnE)	-0.026706	(0.00953	[-2.80309]
D(IR)	-1.745210	(0.81637)	[-2.13777]
C	-19.73437		

The estimated error correction coefficient indicates that about 51% deviation of the Current Account Balance from its long run equilibrium level is corrected each year. About 2.6% and 17% deviation of exchange rate and interest rate respectively from long run equilibrium level is corrected each year.

Table 6: Granger Causality Test (Lags 2)

Null Hypothesis	obs	F-statistic	Prob.
LnE does not Granger Cause LnCAB	33	1.69958	0.1744
LnCAB does not Granger Cause LnE	33	2.61399**	0.0485
IR does not Granger Cause LnCAB	33	0.81038	0.6037
LnCAB does not Granger Cause IR	33	0.88417	0.5503
IR does not Granger Cause LnE	33	0.55805	0.7965
LnE does not Granger Cause IR	33	3.06492**	0.0270

Granger Causality suggests that if p-value is greater than 0.05 critical values then we can't reject null hypothesis. From Table 6 it is clear that there is an unidirectional causality running from the current account balance to the exchange rate and from exchange rate to interest rate but no causal relationship in other cases.

Impulse Response Function

Impulse Response function shows the impact on a particular variable due to the external shocks on itself or on other variables.

Response to Cholesky One S.D. Innovations
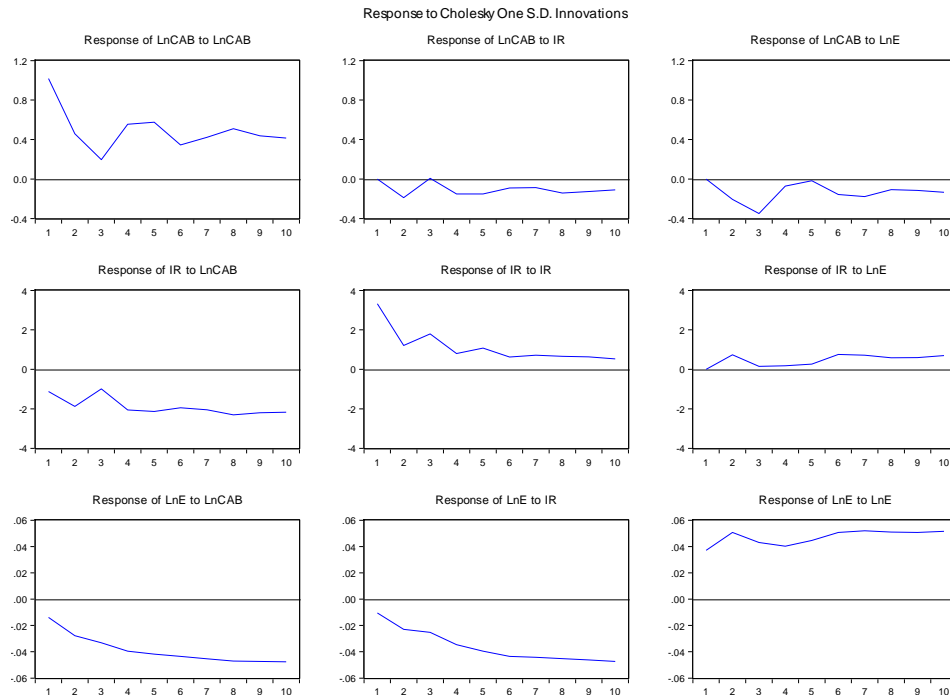
We consider ten years forward following a shock in VAR model as shown by the horizontal axis of the figure whereas the vertical axis shows the estimated value of a response variable following an external shock. Analyzing the results we can conclude that the current account balance has a positive response to its own shock but it responds negatively to the shocks from the official exchange rate and the real interest rate. On the contrary, the real interest responds positively to its own shock as well as to the shock from the official exchange rate but responds negatively to the shock from the current account balance. Finally, the exchange rate responds positively to its own shock but negatively to the shocks from the current account balance and the interest rate. The findings of the impulse response function shows that in a very few cases the external shocks have been neutralized for a certain period of time but in most of the cases the external shocks have not been neutralized.

6. **Conclusion and Recommendations**

This study investigates the impact of the interest rate and the exchange rate on the current account balance of Bangladesh. The result of ADF shows that all the data series of the variables are stationary at the first difference values and integrated of order one (1). Johansen test result

indicates that in the long run, the Exchange Rate has a positive and the Interest Rate has a negative significant impact on Current Account Balance in Bangladesh. If the exchange rate increases by 1% the current account improves by 1.642108% and if the interest rate increases by 1% then the current account deteriorates by 0.240487%. The result of vector error correction (VECM) model indicates that the current account requires approximately 51% of error correction per year, the exchange rate requires 2.6% of error correction per year and the interest rate requires 17% of error correction per year to reach the equilibrium. Granger causality shows that there is an unidirectional causality running from current account balance to exchange rate and from the exchange rate to the interest rate. The findings of the impulse response function shows that in most cases the external shocks have not been neutralized. Since the surplus in the current account balance keeps a country in the favorable stage in the international trade, we should increase the productivity of labors, competitiveness of the products in the international trade, investment in technology and standard of infrastructures to make the current account balance in favor of us.

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Appendices

Table 1: Correlation result between exchange rate and interest rate

	Interest Rate (IR)	Exchange Rate
Interest Rate (IR)	1.0000	0.0302260
Exchange Rate	0.0302260	1.00000

Decision : No serious correlation or multicollinearity has been found between interest rate and exchange rate

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