Measuring Financial Distress of Non-Bank Financial Institutions of Bangladesh Using Altman's Z-score Model

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Abstract

Non-bank financial institutions (NBFIs) are recognized as the fundamental of a financial market as they complement the banking institutions. Since 1981, NBFIs have been playing a vital role in the economic growth of Bangladesh. Unfortunately, in the recent years most of the NBFIs have been found financially distressed. However, few NBFIs that were included in our sample claimed themselves as potential companies with sound financial performance though it was highly criticized. Therefore, the motivation for conducting this study is to examine the financial soundness of selected NBFIs using Altman's Z score (1995). This study involved 20 NBFIs out of 23 Dhaka Stock Exchange (DSE) listed institutions, which were selected based on information availability by considering A, B and Z categories from 2014 to 2018 period. The secondary data were collected from the annual reports of the selected companies over the period. The findings are as follows: 95% of the 20 NBFIs were in distress zone during the study period and only 5% NBFIs were in safe zone during 2017-2018 period. Therefore, the analysis predicted that within the upcoming years a few of the NBFIs will be approaching bankruptcy. Finally, it is suggested that the government, respective regulatory authority, and policy makers to pay an immediate attention on mitigating the factors affecting the financial distress.

Keywords:

Altman Z-score, NBFI, financial distress, Dhaka stock exchange, working capital, total assets, EBIT, retained earnings

INTRODUCTION

World Bank defined Non-Bank Financial Institutions (NBFIs) as financial institution that neither have full banking license nor can accept direct deposits from the public. But Bangladesh bank defined NBFIs which cannot issue cheques, pay-orders or demand drafts, receive demand deposits and cannot involve in foreign exchange financing as they practice a risk-based supervisory system that have been given license and regulated under the Financial Institution Act, 1993.

Non-Bank Financial Institution in Bangladesh has started its incorporation since 1981. According to the Bangladesh Bank (the central bank of Bangladesh) till 2020, 34 NBFIs are contributing to the country. Out of the total 34 NBFIs, 3 institutions are owned by the government and as of June 2018 total assets of 34 NBFIs were BDT 841.07 billion. Banks generally collect short term funds and approve long term loans. But allocating long-term loans

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from short term deposits is really difficult to be managed in a practical sense. As a result, this situation may create a gap between borrowing and lending. That gap can be covered by NBFIs as they perform long term financial activities.

NBFIs in Bangladesh grant long term loan to the businesses and perform agency function, merchant banking, leasing, hire purchase, underwriting, dealers and brokers. An efficient strategy can be the cause of financial stability of NBFIs in Bangladesh. Hossain (2004) stated that the performance of NBFIs is highly depended on financial strategy of firm and noticed that term deposit, total asset, operating revenue and operating expense are the main determinants of financial performance measure of NBFIs in Bangladesh.

NBFIs play a vital role in the capital market as well as in the corporate and SME sector of Bangladesh. Most of the NBFIs have separate subsidiaries to operate merchant banking activities. An earlier study also found the direct impact on NBFI performance and Capital Market growth (Iovu & Miloᵒ, 2008). NBFIs can facilitate alternative financial services, such as investment (both collective and individual), risk pooling, financial consulting, brokering, money transmitting and accepting cheques. Furthermore, NBFIs have additional activities including hire purchasing, leasing, giving loans, consulting for joint ventures, mergers and acquisitions (Kiragu, 1991). NBFIs are one of the major sources of consumer credit along with scheduled banks. NBFIs acts as a complementary of banking institutions by fulfilling intermediary gap between and among parties related with financial activities (Shreshta, 2007; Sufian, 2008; Vittas, 1997).

Banking and non-banking financial institutions have direct impact on the economic growth of Bangladesh. Hossain (2004) and Carmichael, 2002) stated that NBFIs have positive correlation with economic growth and they have direct impact on mitigating the gap between service receiver and provider. NBFIs have a significant contribution to a country's economy to grow financial condition as they help to diversify financial services in different marketplaces (Ahmed & Chowdhury, 2007). The positive correlation between NBFIs and per capita real GDP had been found in Malaysia (Aminul et al., 2004).

Because of the liquidity crisis for short term funds borrowing and long term lending, commercial banks sometimes can be failed giving long term loan, for this reason a gap is being visible in the financial market. To remove that gap NBFIs are contributing to the financial market. NBFIs are rapidly growing institutions in Bangladesh and gaining public confidence in the recent time though the financial report of those organization is not satisfactory as standard.

Though previously NBFIs had significant contribution in the economy of Bangladesh but because of some major crisis at the recent time its performance is a questionable matter to the researchers and policy makers. In 2019, one of the top listed NBFI namely "Peoples Leasing & Financial Service Limited" was announced to be liquidated by respective authority. Interestingly most of the NBFIs were found in distress zone although they showed strong allegation as efficient and safe financial institutions nationally and internationally (Hamid et al., 2016).

Banking is an old concept; it is contributing from the very beginning of the world monetary system in both financial sector and non-financial sector. But after establishing NBFIs, they are directly helping to mobilize the saving and investment with banking institutions equally (Deakin, 1972). NBFIs create long term resources in investment sectors of an economy and provide long term support in underwriting, leasing, investing in share market as well as venture capital (Vittas, 1997).

Non-bank financial institutions are growing in both developed countries and developing countries, they are contributing in financial sector with the banking companies (Sufian, 2008; Kogi, 2003). Although many researchers conducted research on NBFIs in developed countries where they mentioned importance of NBFIs in financial sector of developed countries but like Bangladesh, many developing countries have research scarcity on the issue of financial distress of NBFI in financial sector as a complementary of banking institutions. Few researches have been found which worked with financial distress of Bangladeshi NBFIs in the recent time. Therefore, this study aims to add some important value for the regulators, investors, researchers and shareholders on non-bank financial institution of Bangladesh during the period of 2014-2018.

This study basically examined the Altman Z-score model for non-manufacturing companies (Altman, 1995) that includes 20 non-bank financial institutions considering A, B and Z categories which are listed in Dhaka Stock Exchange. Firstly, it developed literature and insights about Altman Z Score. Then data analysis was made by Altman-Z score for nonmanufacturing formulae. Finally, it describes the research gap and recommendation for further studies and important insights for the regulator about financial forecasting of the respective NFBIs.

LITERATURE REVIEW

Non-bank financial institutions

In order to know the applicability of Altman's Z-score model, Samkin (2012) conducted study on five years' data of 20 finance companies in New Zealand and found positive reaction of the model while measuring the distress of the company. Before getting collapse, the selected companies were found in distress zone during five consecutive years. They also found internal management inefficiency, lack of supervision, absence of security funds, improper regulations and lack of effective corporate governance are the most significant factors of getting collapse. Finally, they suggested that every company should apply the model to check the financial distress in each financial year.

Osuala and Odunza (2014) noticed that significant positive correlation belongs between NBFIs performance and economic growth in Nigeria during the study period. They also stated that the insurance companies in Nigeria showed significant business growth by successfully minimizing their business risk. Furthermore, it was also mentioned that people were participating more in saving and investment in various Non-Bank financial Institutions.

With a view to knowing the significance of financial benefit, financial health and soundness of leasing company in India Jaisheela (2015) examined Altman's Z-score model on 27 leasing companies during the period 2008-09 to 2013-14. The study found that 27% companies were in distress zone and those companies belong in grey zone (22%) did not maintain financial stability over the years.

Sakyi et al. (2014) conducted research on risk and performance of NBFIs in Ghana where they selected 42 NBFIs of Ghana. Data were collected from respected companies' annual reports during 2006 to 2010. The study found that NBFIs had good performance over the study periods and had great impact on growth of its economy. They also suggested that the instable financial performance can be minimized by improving internal management and government supervision in a timely manner.

Solvency prediction of financial institutions is the significant research concern over the past decades. Several models were discovered to identify financial distress. Among these Altman Z-score model, Fulmer H score model and Springate Z-score model are popularly used. For predicting the solvency Mostafa and Fahad Noor (2020) examined comparative analysis of Fulmer H score model and Springate Z-score model using 20 Non-bank financial institutions of Bangladesh listed in Dhaka Stock Exchange. The study period spanned over five years from 2013 to 2017 of the selected companies. The analysis found that Springate Z-score model identified all the companies were in distress zone whereas Fulmer H score model identified 16 companies were in safe zone. The author concluded that Fulmer H score model was more appropriate for Bangladeshi companies compared to Springate Z-score model.

A few studies have been found to investigate about financial distress of different NBFI in Bangladesh. It was also found that some of the NBFIs of Bangladesh declared themselves as a financially sound companies but the result of the analysis was completely opposite to the statement. Therefore, in order to examine financial distress using Altman Z score model, Hamid et al. (2016) conducted a study on 15 NBFIs which were listed in Dhaka stock exchange. They collected data from selected company's annual report during 2011 to 2015. The analysis found that on average, 92% companies were in distress zone during the study period.

Altman's Z-score

Beaver (1966) introduced the Beaver model which is based on univariate nature where only one ratio could have used at a time. After that, Altman, a financial economist of New York University and Stern School of Business noticed the limitation of the existing Z-score model and developed a new model namely Altman's Z-score in 1968 based on multivariate nature.

Altman's Z-score utilized a multivariate formula which can be used to predict a company's financial performance and give a clear indication about possibilities of a company's bankruptcy. Altman used four basic ratios for non-manufacturing companies and five basic ratios for manufacturing companies but strangely these ratios give 72% to 80% accurate result (Hayes et al., 2010).

Altman's Z-score is the statistical derive and complete package to predict about the company's future bankruptcy. Z-score model distress analysis was the best performed model than the other market-based or hazard models. Z-score model provided 75% accuracy in different economies and if country specific variable is adjusted, then it provided 90% accuracy (Altman et al., 2017).

Although this model was developed based on small manufacturing companies but it can be used in other industries by adjusting related variables. In his later work, Altman adapted the model to predict financial distress of non-manufacturing institution

The original Altman's Z-score model was developed for manufacturing companies:

$$Z_1 = 0.012\,X_1 + 0.014\,X_2 + 0.033\,X_3 + 0.006\,X_4 + 0.999\,X_5$$

Where,

X_1 = Current assets-current liabilities (working capital)/Total assets;
X_2 = Retained Earnings/Total assets;
X_3 = Earnings before interest & taxes (EBIT)/Total assets;
X_4 = Market value of equity/Book value of debt;
X_5 = Sales/Total assets;

Altman upgraded the Z-score model for manufacturing companies to draw better results (Altman, 1983):

$Z_2 = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$

Where,

X_1= Current assets-current liabilities (working capital)/Total assets;
X_2= Retained Earnings/Total assets;
X_3= Earnings before interest & taxes (EBIT)/Total assets;
X_4= Market value of equity/Book value of debt;
X_5= Sales/Total assets;

Finally, Altman developed a Z-score model for non-manufacturing companies (Altman, 1995). This model is used to predict financial distress and future bankruptcy where he excluded a ratio from manufacturing firms and the final model is:

$Z_3 = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$

Where,

X_1= Current assets-current liabilities (working capital)/Total assets;
X_2= Retained Earnings/Total assets;
X_3= Earnings before interest & taxes (EBIT)/Total assets;
X_4= Market value of equity/Book value of debt;

In the mid-1980, the Altman Z-score model was accepted and recognized by researchers, economists and managers. Until now, Altman's Z-score is commonly used to predict different industries around the world (Hayes et al., 2010). For example, Mostofa, Rezina and Hasan (2016) conducted a financial distress analysis of 25 banking companies in Bangladesh using 2010 to 2014 data from selected companies' financial statements by using the Altman Z score model. The analysis found that 20% company belongs with distress zone during the study period. The author identified that significant degree of fluctuation was appeared in EBIT to total asset ratio which is the main reason of having financial insolvency.

METHODOLOGY

This study is conducted to measure financial distress of non-bank financial institutions in Bangladesh. In this research, we selected 20 (86.96%) NBFIs out of 23 listed institutions in Dhaka Stock Exchange. Table 1 shows the list of company name included in the research sample, company symbol in DSE and company category in DSE. From the selected 20 companies, 13 companies from 'A' category, 4 companies from 'B' category and remaining 3 companies from 'Z' category. To get an acceptable result our selected institutions were based on information availability. To conduct research, we used 5 years data from 2014 to 2018. In between this period, the economic growth of Bangladesh was stable and there was no financial

crisis during this period. Therefore, the 2014-2018 data were collected to get clear information about NBFIs in Bangladesh. Data were collected from annual reports of respected institutions.

Table 1: Sample details

SL. No	Company Name	Company Symbol in DSE	Category in DSE
1.	BD Finance & Investment Co. Ltd.	BDFINANCE	A
2.	Delta Brac Housing Finance Corp. Ltd	DBH	A
3.	Fareast Finance & Investment Ltd.	FAREASTFIN	Z
4.	FAS Finance & Investment Ltd.	FASFIN	B
5.	First Finance Ltd.	FIRSTFIN	Z
6.	GSP Finance Company (BD) Ltd.	GSPFINANCE	A
7.	IDLC Finance Ltd.	IDLC	A
8.	IPDC Finance Ltd.	IPDC	A
9.	Investment Corporation of Bangladesh	ICB	A
10.	Lanka Bangla Finance Ltd.	LANKABAFIN	A
11.	Bay Leasing & Investment Ltd.	BAYLEASING	A
12.	Premier Leasing & Finance Ltd.	PREMIERLEA	B
13.	Prime Finance & Investment Ltd.	PRIMEFIN	Z
14.	Union Capital Ltd.	UNIONCAP	B
15.	United Finance Ltd.	UNITEDFIN	A
16.	Phoenix Finance & Investments Ltd.	PHOENIXFIN	A
17.	National Housing Fin. & Invest. Ltd.	NHFIL	A
18.	Midas Financing Ltd.	MIDASFIN	B
19.	Islamic Finance & Investment Ltd.	ISLAMICFIN	A
20.	Uttara Finance And Investments Ltd.	UTTARAFIN	A

Source: www.dsebd.org

A Category: Company which declared dividend and held annual general meeting in every financial year.

B Category: Company which failed to declare minimum dividend but held annual general meeting in every financial year.

Z Category: Company which failed both to declare dividend and Annual General Meeting (AGM) in every financial year.

Statistical Model

This study used Altman's Z-score model because this model was able to provide high accuracy results in performance analysis both for Bank Financial Institutions (BFIs) and NBFIs. Some researchers show that Altman's Z-score accuracy is 75% and 1 to 2 years advance result can be predicted by using this model (Altman et al., 2017). Altman's Z-score is the most accepted model to predict financial distress and its accuracy rate is over 90% (Hayes et al., 2010). Altman's Z-score model has 90.9% efficiency to predict financial distress for one year prior to the company's bankruptcy and has 97% efficiency to predict financial solvency with continuing economic stability (Siddiqui, 2012).

Finally, the model of Altman (1995) which was developed for non-manufacturing companies is used here in this research:

$$Z_3 = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Table 2: Short Description of Altman's Z-score variable

Dependent Variable		Independent variables	
Z-score: A multivariate formula which can be used to predict company's financial performance	X_1	Working capital/Total assets	This ratio is used to measure company's ability to meet short term liquidity obligation. Ideal working capital ensures company's efficiency and creditworthiness.
	X_2	Retained Earnings/ Total assets	This ratio examines company's reinvestment capacity. The higher the ratio, the more reinvestment opportunities. Negative ratio indicates company's financial insolvency.
	X_3	EBIT/Total assets	It is a result of how a company employ its total assets to raise optimum output. The higher the ratio, the more efficient the use of total assets.
	X_4	Market value of equity/ Book value of debt	It means declining firm assets value before liabilities over assets and the firm becomes insolvent. Market value of equity means market capitalization and debt means both short term and long-term debt.

Table 3: Altman's Z-score decision rules

Decision Rules		
Z-score	**Zone**	**Area**
Below 1.81	Distress	Transitory and inefficient
Above 1.81 & below 2.99	Grey	At Risk
above 2.99	Safe	Sustainable and efficient

Source: Altman, 1995

Companies with Z-score below 1.81 are nominated as failure that means companies in distress zone. Companies with Z-score above 1.81 and below 2.99 means in Grey zone that means they need special supervision and they are at risk. Companies with Z-score above 2.99 means they are in safe zone which indicate that they do not have the possibility to distress.

FINDINGS AND ANALYSIS

Table 4 describes the performance of 20 NBFIs in Bangladesh using Altman's Z-score model from the respective company's financial statement during 2014 to 2018. The empirical result showed that only one company was in safe zone in 2017 and 2018. Similarly, only one company was found in grey zone during 2014, 2015 and 2018. On the other hand, Table 5 identifies the year basis percentage changes in each three categories. The table describes that in 2014 and 2015, 95% of the selected companies were found in distress zone, 5% in gray zone and no companies were found in safe zone. In 2016, 100% of the selected companies were found in

distress zone. 95% companies were in distress zone and 5% company was in safe zone during 2017. Finally, in 2018, 5% company marked themselves as in safe zone and 5% as in gray zone and the rest 90% companies were found in distress zone.

Table 4: Financial ratio analysis

BD Finance & Investment Co. Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.06246	0.02042	0.02228	0.16295	0.79713	Distress
2017	0.06180	0.01523	0.01856	0.13724	0.72388	Distress
2016	0.00688	0.01092	0.01765	0.12932	0.33513	Distress
2015	0.00828	0.01015	0.02025	0.12077	0.35029	Distress
2014	0.02680	0.00442	0.01848	0.12509	0.44575	Distress

Delta Brac Housing Finance Corp. Ltd

Year	X1	X2	X3	X4	Z	Zone
2018	-0.40922	0.03522	0.02610	0.09607	-2.29340	Distress
2017	-0.06872	0.00758	0.02508	0.08677	-0.16645	Distress
2016	-0.02478	0.00483	0.14677	0.08375	0.92742	Distress
2015	-0.03536	0.01014	0.03528	0.09752	0.14057	Distress
2014	0.03347	0.00934	0.03532	0.08906	0.58088	Distress

Fareast Finance & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	-0.02159	-0.06791	-0.00009	0.11118	-0.24688	Distress
2017	0.03515	-0.06874	-0.02434	0.08303	-0.06989	Distress
2016	0.19173	0.00591	0.00330	0.17273	1.48056	Distress
2015	0.15870	0.01222	0.01800	0.18697	1.39819	Distress
2014	0.10534	0.01750	0.03552	0.22124	1.21908	Distress

FAS Finance & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.00537	0.00923	0.01433	0.12055	0.28819	Distress
2017	0.00310	0.10920	0.01306	0.11569	0.58557	Distress
2016	-0.14554	0.01378	0.01382	0.11525	-0.69594	Distress
2015	0.01107	0.01086	0.01546	1.40068	1.68263	Distress
2014	0.03610	0.01976	0.02833	2.14097	2.73963	Grey

First Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.02153	0.00223	0.00334	0.16411	0.34327	Distress
2017	0.00518	-0.02035	-0.01406	0.11936	-0.00152	Distress
2016	0.00370	0.00617	0.01298	0.17931	0.31989	Distress
2015	0.02153	0.00223	0.00334	0.16411	0.34327	Distress
2014	0.06305	0.00720	0.01237	0.18061	0.70985	Distress

GSP Finance Company (BD) Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.05423	0.02473	0.05817	0.43026	1.27904	Distress
2017	0.07061	0.02491	0.05956	0.35166	1.31389	Distress
2016	0.05812	0.02861	0.06722	0.44751	1.3961	Distress
2015	0.06139	0.02927	0.05253	0.38142	1.25163	Distress
2014	0.07550	0.01816	0.03861	0.41942	1.25433	Distress

IDLC Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	-0.00679	0.04711	0.02655	0.11713	0.41044	Distress
2017	0.00046	0.04621	0.02470	0.12701	0.45301	Distress
2016	0.02315	0.04529	0.02470	0.12701	0.59885	Distress
2015	-0.20549	0.03730	0.03580	0.11860	-0.86131	Distress
2014	-0.23899	0.03790	0.03712	0.12458	-1.06397	Distress

IPDC Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.01675	0.01073	0.02223	0.08024	0.37850	Distress
2017	0.00380	0.01386	0.01712	0.08598	0.27544	Distress
2016	0.00222	0.02548	0.02222	0.14014	0.39409	Distress
2015	0.08352	0.07132	0.04194	0.43216	1.51591	Distress
2014	0.08432	0.07296	0.04455	0.42040	1.53179	Distress

Investment Corporation of Bangladesh

Year	X1	X2	X3	X4	Z	Zone
2018	-0.14600	0.04734	0.03902	0.28598	-0.24094	Distress
2017	-0.03084	0.06524	0.39119	0.64256	3.31386	Distress
2016	-0.14600	0.04734	0.03902	0.28598	-0.2409	Distress
2015	0.10182	0.06525	0.04502	0.64255	1.85787	Grey
2014	0.08353	0.06826	0.04698	0.49344	1.60430	Distress

Lanka Bangla Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.33573	0.09282	0.06115	0.80176	3.75776	Safe
2017	0.32157	0.06962	0.09619	0.76298	3.78399	Safe
2016	0.06327	0.02470	0.02348	0.11697	0.77618	Distress
2015	-0.02789	0.03413	0.01057	0.14198	0.14842	Distress
2014	0.10079	0.05081	0.01112	0.18581	1.09665	Distress

Bay Leasing & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.03305	0.00972	0.01676	0.16945	0.53905	Distress
2017	0.01126	0.00853	0.01679	0.19038	0.41440	Distress
2016	0.00428	0.01058	0.01397	0.19500	0.36111	Distress
2015	0.00609	0.00935	0.01621	0.32390	0.51946	Distress
2014	0.04518	0.025200	0.02267	0.42246	0.97446	Distress

Premier Leasing & Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.10156	0.00384	0.01310	0.13293	0.90636	Distress
2017	0.00900	0.01097	0.01610	0.13102	0.34057	Distress

2016	0.05815	0.01325	0.01484	0.10519	0.63483	Distress
2015	0.06056	0.00394	0.01312	0.08945	0.59221	Distress
2014	0.00388	0.00179	0.00617	0.14393	0.22388	Distress

Prime Finance & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.00434	-0.14479	-0.00860	0.21418	-0.27645	Distress
2017	-0.03176	-0.11932	-0.02783	0.15892	-0.61748	Distress
2016	-0.08853	-0.08027	-0.04081	0.17871	-0.92903	Distress
2015	-0.16472	-0.00718	-0.02119	0.29812	-0.93334	Distress
2014	0.02015	0.03336	0.02664	0.40362	0.84376	Distress

Union Capital Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.01496	0.08900	0.01703	0.11052	0.61877	Distress
2017	0.03284	0.00704	0.01637	0.09587	0.44905	Distress
2016	0.02335	0.00839	0.03012	0.10195	0.48998	Distress
2015	0.00740	0.00972	0.02393	0.14113	0.38923	Distress
2014	0.02852	0.01344	0.03395	0.18069	0.64877	Distress

United Finance Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	-0.11979	0.00790	0.02386	0.14888	-0.44341	Distress
2017	0.04127	0.00860	0.01923	0.14438	0.57959	Distress
2016	0.02559	0.01237	0.02248	0.16540	0.53293	Distress
2015	0.00815	0.01223	0.02699	0.16185	0.44465	Distress
2014	0.02852	0.01344	0.03395	0.18069	0.64877	Distress

Phoenix Finance & Investments Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.00328	0.00837	0.02666	0.10528	0.338502	Distress
2017	0.02447	0.00802	0.02677	0.09026	0.461336	Distress
2016	0.00401	0.01022	0.02795	0.11733	0.370643	Distress
2015	0.00298	0.01239	0.03397	0.01417	0.303097	Distress
2014	0.00251	0.00102	0.03711	0.14401	0.420381	Distress

National Housing Finance & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.04859	0.01162	0.02449	0.09238	0.618203	Distress
2017	0.02278	0.01394	0.02935	0.11759	0.515583	Distress
2016	0.04996	0.01736	0.03846	0.15423	0.804724	Distress
2015	0.11823	0.02250	0.05130	0.21711	1.42164	Distress
2014	0.00132	0.02528	0.05084	0.28064	0.727389	Distress

Midas Financing Limited

Year	X1	X2	X3	X4	Z	Zone
2018	0.01393	0.00394	0.01046	0.13964	0.321138	Distress
2017	0.02823	0.01334	0.02456	0.13888	0.539544	Distress
2016	-0.42438	-0.01055	0.02975	0.12486	-2.4873	Distress
2015	0.06310	0.05969	0.05468	0.16186	1.145928	Distress
2014	0.05610	0.04019	0.03945	0.04064	0.806811	Distress

Islamic Finance & Investment Ltd.

Year	X1	X2	X3	X4	Z	Zone
2018	0.08365	0.01165	0.02273	0.13287	0.878982	Distress
2017	0.07868	0.01279	0.01576	0.14310	0.813998	Distress
2016	0.06332	0.01697	0.03253	0.16732	0.864989	Distress
2015	0.06200	0.01719	0.02801	0.20666	0.86798	Distress
2014	0.04988	0.02088	0.02796	0.25449	0.850387	Distress

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Year	X1	X2	X3	X4	Z	Zone
2018	0.18620	0.01705	0.05816	0.20058	1.878499	Grey
2017	0.14047	0.00761	0.04862	0.19241	1.475049	Distress
2016	-0.02158	0.00639	0.04488	0.23233	0.424807	Distress
2015	0.08573	0.00508	0.04341	0.20724	1.088267	Distress
2014	0.02324	0.00196	0.02757	0.21030	0.564929	Distress

After collecting the data, Table 5 below is constructed by the authors to summarize the research results.

Table 5: Result summary

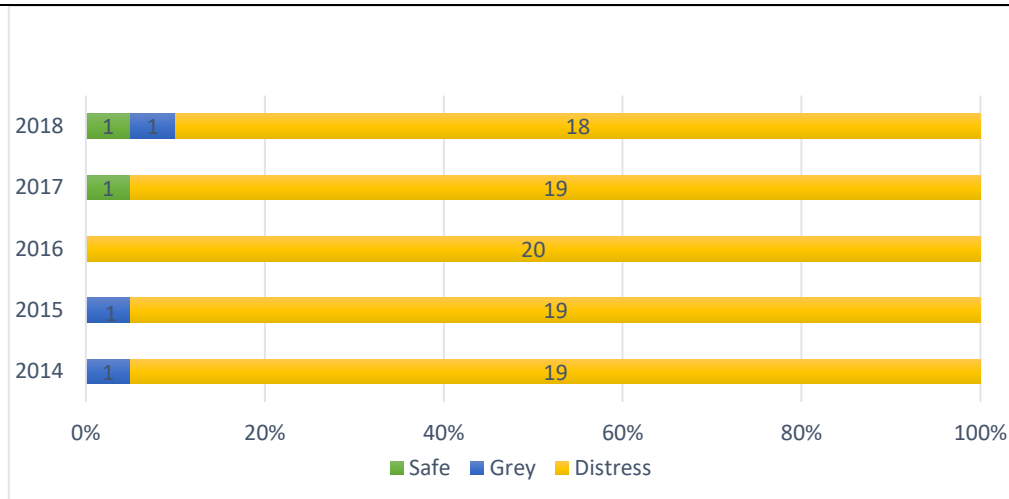| Zone	2014		2015		2016		2017		2018	
	No.	%	No.	%	No.	%	No.	%	No.	%
Safe	0	0%	0	0%	0	0%	1	5%	1	5%
Grey	1	5%	1	5%	0	0%	0	0%	1	5%
Distress	19	95%	19	95%	20	100%	19	95%	18	90%
Total	20	100%	20	100%	20	100%	20	100%	20	100%

Figure 1: Performance analysis of NBFIs in Bangladesh yearly by number of institutions

Based on Figure 1, there was no company in safe zone in 2014, 2015 and 2016. Only one company out of twenty was in safe zone in 2017 and 2018 respectively.
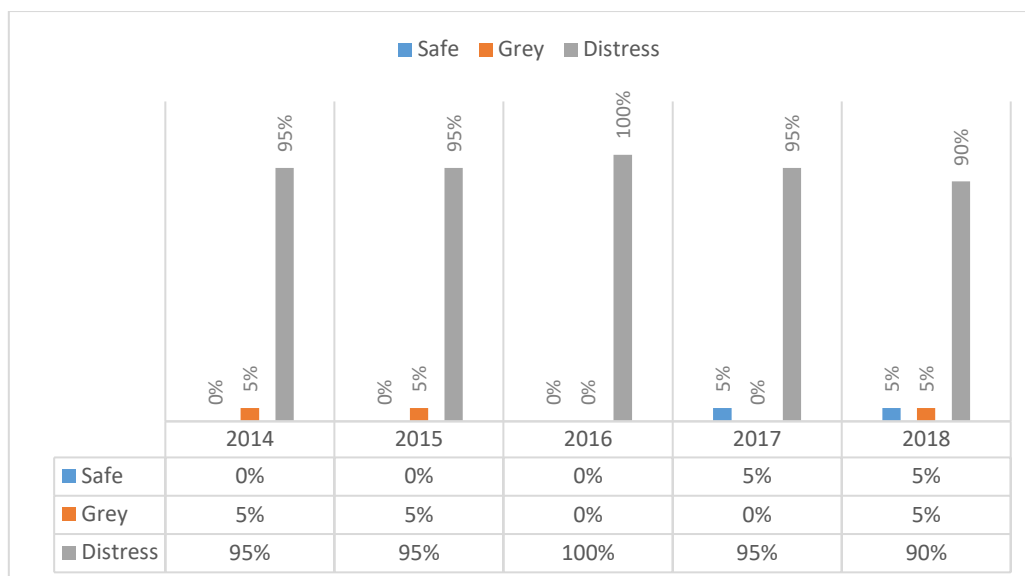
Figure 2: Performance analysis of NBFIs yearly by percentage of institutions

According to Figure 2, none of the company was in safe zone in 2014, 2015 and 2016. Meanwhile, 5% of the sample was in safe zone in 2017 and 2018. Figure 1 and 2 show the significant observation during the study period which predicts non-bank financial institutions in Bangladesh were totally out performed.

CONCLUSION

NBFIs are providing their services which are not only the complementary of banking institution but also help to facilitate and to make a sound environment in financial market (Uddin & Gupta, 2012). Though NBFIs were found as a significant contributor of a countries economic growth (Ahmed & Chowdhury, 2007), in the recent times NBFIs were in major crisis (Hamid et al., 2016). This paper attempted to present the current financial status of NBFIs of Bangladesh as well as to reflect the test of bankruptcy using the well-recognized model of Altman's Z-score. In light of the previous research findings and recommendations, our study aims to identify the real scenario of financial distress of 20 non-bank financial institutions listed in DSE. The results revealed that 90% NBFIs were reported in distress zone in 2018 whereas in 2016 it was 100%. However, it is recommended to expand this study by two ways for future research. Firstly, researchers can proceed by testing financial distress using other accepted model like Logit model, Springate model and Fulmer model. Secondly, researchers can expand the study period to get better comparison. The major findings of this study are dissatisfactory level of financial performance of non-banking financial institutions in Bangladesh. To ensure the satisfactory level of financial performance, key stakeholders of companies should take some prompt actions regarding unsatisfactory credit policy, non-performing loan management, inefficient management capability and resource scarcity. The regulators and investors are suggested to have a close look on the behavior of internal management, lending areas, off balance sheet items, chronological financial performance and surveillance of other activities.

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