

Exploring financial distress through Altman Z" score: example of selected private commercial banks in Nepal

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Abstract

Purpose - This research aims to explore the financial distress of selected Nepalese commercial banks using Altman's Z" score model.

Design/methodology/approach - Based on quantitative research approach, this research has followed descriptive research design to assess financial distress. Amid of 24 private commercial banks, this study has selected 16 sample banks conveniently. Altman's revised Z" score (1993) model has been used to draw inferences. The published annual financial report of respective banks of year 2019-20 was employed as secondary information.

Findings and Conclusion - Among 16 sampled banks, 6 commercial banks are laid under zone of distress and 10 banks as in undecided zone. Similarly, this study has revealed the inefficiency of Z" score model in predicting financial distress.

Originality/value - Commencing Altman's Z" score model designed for non-manufacturing and companies of emerging market in relation to Nepalese commercial banks.

Keywords: Altman's Z" Score, financial distress, bankruptcy, commercial banks, financial ratios

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1. Introduction

The financial setback in companies is not occurred suddenly but many forces direct the businesses to be failed. In general, the high interest rates, higher debt burdens, government regulations as well as recession could be contributing to business failures. So, it is imperative for the companies to be fully conscious about their sustainability risk to employ necessary actions to get better business stability. Different years of 1960s discovered financial distress and corporate failure predicting model named Altman (1968) and Beaver (1966) these are empirically examined till the days. Beaver (1966) analyzed the single financial ratio (Cash Flow/Total Debt) to categorize the companies as bankrupt or solvent and further Altman (1968) broadened Beaver's (1966) version and developed a particular model entitled Altman Z-score. The classic model of Altman (1968) was based on multivariate approach and composed by five different financial ratios. Furthermore, the researcher implemented Multiple Discriminate Analysis (MDA) on model; subsequently contemporary researchers upgraded these two instruments for industry as well as for country respectively (Galvao et al., 2004).

Until August 2021, 27 commercial banks, 18 development banks, 17 finance companies, 70 microfinance companies and single infrastructure development bank have been in existence in Nepal (Financial Statistics, 2021 August). Sound and healthy banking system greatly influence the financial stability and economic prosperity of the country. Poudel (2005) views the Nepalese banking industry as a major contributing sector for economic growth and progress of the country.

Poudel (2020) put forward views regarding operational and currency risks during pandemic Covid-19 and articulated the remittance inflow as a major source of foreign currency earning to Nepal. Observing first seven months of the fiscal year 2020/21, the remittance inflow was reduced by 0.5%. Similarly, the tourism sector as a source of foreign currency may take long time to bring back its life, and thus ultimately diminish Nepal's foreign currency reserves and creates difficulties in paying the import bills. There are quite a number of consequences of pandemic particularly; it may push the asset prices to be declined that in turn locate the balance sheet of banks and financial institutions (BFIs) in pressure for several years. Paudel (2020) further postulates, attracting the new depositors and identifying the new investable projects, that the banks may lead some type of financial turmoil or even bankruptcy.

Business or corporate failure can be viewed from different perspectives. Altman et al. (2007) suggest bond default, bankruptcy, insolvency, bank loan defaults, delisting of a firm, liquidation and government intervention through special financing lead to the business failure. Similarly, Wu (2010) put views regarding business failure as the incapability of a company to satisfy the obligations of lenders, suppliers, preferred stock shareholders or declaring bankruptcy as per the law. Further, Meeks and Meeks (2009) warn those failures may lead liquidation of the firms and ultimately followed to bankruptcy.

Levratto (2013) explains the financial distress as the state of a company when liabilities exceed its book value of assets. Similarly, when a fixed expenditure of a company increases there is a high possibility of financial distress risks (Johnsen & Melicher, 1994). Bankruptcy is anticipated when the firms have no more capabilities of paying their obligations to suppliers, banks, employees as well as tax authorities. McKee (2003) argued, when aggregate liabilities of a firm succeed over face value of the company's assets that can lead to bankruptcy and consequently the companies' assets could employ to repay outstanding debt. When a company has inefficiency to address financial obligations as the debts become payable, the possibility of insolvency is higher. So, Ahn (2001) opines as the current liabilities are observed higher

compared to current assets, insolvency occurs. In this way, business failure results insolvency, and it brings great loss to shareholders, creditors, lenders and employees. Extensively, the companies cannot repay taxes to the government and ultimately, large sized corporate failures slow down the economy.

Ahn, Cho and Kim (2000) mention that substantial harms and losses to economy as well as to the entire society could be expected by business failure. Ropega (2011) suggests to identify and address worsening financial status of a company because it results sales reduction, decrement in liquidity as well as in profit (Ooghe & De Prijcker, 2008; Korol & Prusak, 2005); similarly it may be the cause of rising debt (Koksal & Arditi, 2004); the declining in market share (Crutzen & Van Caillie, 2007). Ropega (2011) further dictates the motives behind identifying the business failures and state first as to avoid the probable collapse of a firm and to reach at source or origins of the failure and to tackle them conveniently.

Researches in the arena of financial failure in Nepalese businesses are not so much encouraging, and remarkably fewer researches were carried out to forecast and analyze. The research study regarding financial failure was observed imperative to stakeholders like investors, managers, creditors, the government, employers, or to customers. Financial globalization has converted the worlds' financial markets to a global financial village which has created wide opportunities to stock market. Similarly, the market integration has increased the possible risk of financial shocks. So, the rational investor always looks on early symptoms of financial distress and forecast stock prices even in a challenging situation. Non-performing loans to total loan ratio of Nepalese banking industry in mid-July 2020 observed as 1.89% including 1.81% contribution of commercial banks, 1.52% of development banks and finance companies 6.18% (NRB, FSR, 2020). Similarly, financial stability report of Nepal Rastra Bank (2018) has reported, since the last five years, the non-performing loan ratio of Nepalese banks is below 2% of the total loan portfolio which indicates the progress in loan loss provision and assets quality during the year 2012 to 2018. This study has incorporated the published authenticate annual report (income statement and balance sheet) of year 2019-20 and tried to associate the results with financial status (failure) of year 2020 of respective banks. Theoretically, using single-year data to calculate the Altman (1968) Z score is justified because the model was originally developed using data from a single year (p.5). The present study has attempted to measure financial failure of specified Nepalese commercial banks using Altman's (1993) Z'' score model.

2. Literature Review and Research Questions

Fitzpatrick (1932) was the first person who investigated the corporate failure using 13 financial ratios and categorized the companies as active or the inactive, and employed the univariate analysis model in the study; however, Bellovary et al. (2007) found the inefficiency of the model in exhibiting significant association with the failure. Afterward, Beaver (1966) followed Fitzpatrick's efforts and became a pioneer in business failure prediction researches. The given study categorized the companies as bankrupt or solvent and performed univariate analysis by considering 30 financial ratios. Further, Altman (1968) broadened the Beaver's work, employed Multiple Discriminant Analysis (MDA) and developed own corporate failure prediction model that classified the failures (www.accaglobal.com, 2015). Lennox (1999) study advocates the usefulness of logit and probit model in detecting and forecasting corporate bankruptcy relatively than discriminant analysis techniques. The given study considered the data since 1987 to 1994 of listed firms in UK and employed the logistic regression.

Following the Fitzpatrick (1932), Beaver (1966) carried out research in forecasting business failures. His study was based on univariate analysis and employed financial ratios to anticipate the business failure. Beaver (1966) defines the insolvent firms as those that are incapable of repaying the debts. Altman (1968) attempted to eliminate the limitation of Beaver's (1966) model and performed MDA (Multiple Discriminant Analysis) instead of univariate analysis in predicting firms' insolvency. Further, Altman, Haldeman and Narayanan (1977) built a novel model named as ZETA, the Credit Risk Model considering the most recent development in financial failures and that model considered retail and manufacturing firms of US as a sample. The model developed by Ohlson (1980) added a new slab on study of the firm's solvency or the business failures. The research study investigated financial ratios of US based 105 bankrupted and 2058 non-bankrupted firms using log-model and developed O-score to predict corporate failures. Moreover, Menash (1984) scrutinized early models of insolvency prediction and observed the economic conditions could determine accuracy and the structure of the model. The study of Odom and Sharda (1990) is another landmark on insolvency forecasting research; they used Artificial Neural Networks (ANN) as tools for insolvency forecasting. Chen and Lee (1993) further proposed Survival Analysis that was used assessing the financial risks of oil and gas sector in Canada. They examined the liquidity ratio, operating cash flow, the leverage ratio, age and volume to measure the financial risks. Anandrajan et al. (2001) used ANN to build on the insolvency forecasting models and as the predictor they used insolvency score of Zmijewski (1984). Taking into consideration the different time horizons as well as information structures, Abid and Zouari (2002) suggested nine diverse models of neural networks (NNM) in predicting financial insolvency. Using the logit regression, Platt and Platt (2002) sought to advance early warning system of forecasting insolvency regarding automobile suppliers in the US, furthermore purposed leverage, profit margin, liquidity and growth as significant indicators for insolvency.

Fitzpatrick (2004) extensively analyzed the insolvency of publicly traded non-financial firms in the US, and developed Financial Condition Score (FCS) established over three different parameters - firms' size, leverage and standard deviation of the firm's assets. In addition, Laitinen (2005) used survival analysis as a modeling technique to identify predictors of the firm's default. Moreover, Altman and Hotchkiss (2010) put forward a model having 4 variables predicting financial distress in emerging markets. The early Z-score model was modified to improve its applicability in the emerging markets and non-manufacturers. Concentrating country specific, Wang and Li (2007) employed EPS, an interest coverage ratio, RoA, net profit margin, growth ratio per equity share to develop financial failure predicting model regarding the Chinese firms. Following the similar track, Zaki et al. (2011) conducted the study since 2000-2008 on 2000 financial institutions in UAE and originated insolvency forecasting models for Islamic banks in UAE. Considering Indian steel industries, Mondal and Roy (2013) focused their study over financial ratios indicating profitability, liquidity, activity, solvency and growth, and developed the model that forecast business performance. Recently, Altman et al. (2016) performed extensive literature reviews on early developed bankruptcy related models where Z-score was used as insolvency predictor. They observed Altman's original model developed in 1983 performed better results in overseas market in predicting of business failures.

Altman et al. (2014) put forward the logic in support of Altman's Z-score model and argue, even though Altman Z-Score model was commencing at 1968, and still many of the researchers have used it for predicting and analyzing the bankruptcy position. The researchers such as Reisz and Perlich (2007), Sulub, (2014), Celli (2015) reviewed the predictability of Altman model in assessing bankruptcy and all of them approved the reliability of model. Jayadev (2006),

Chatterjee (2018) have investigated the reliability of Altman model in Indian context and in most of cases they found higher certainty of Altman model in prediction of bankruptcy.

Sulub (2014) examined the predictive ability of Altman's revised Z' model considering 5 bankrupted and 5 non-bankrupted companies accompanying financial report data for two years and found that Altman's Z' model was true for failure of multinational companies (MNCs) having the predictive power of 70% and predictive power 55% for the non-failed MNCs. Manaseer and Oshaibat (2018) examined Altman Z-score model to predict financial failure of Amman Stock Exchange (ASE) listed insurance companies over the period of 2011 to 2016 and observed strong predictive power of Z-score model. They further signify Z-Score model as a valuable instrument in making right decisions regarding financial failure. Hayes, Hodge and Hughes (2010) employed Z- score model in a sample of 17 retail industry firms in the US and revealed its bankruptcy predictability level as 94%.

In 1983, Altman developed the revised model on original work called Altman Z'-score model (1983). The revised model included the private manufacturing firms and observed the accuracy 95% for the first year prior to failure and 73% accuracy for the second year prior to failure. Altman et al. (2018) tested the validity of Altman's Z-score model over private non-financial companies of 3 non-European and 31 European countries, and identified the Z-score model had bankruptcy predictability around 0.75 for most of countries. This shows the reasonably fit Z-score model even analyzing internationally. The study of Tinoco and Wilson (2013) in UK listed companies has presented Altman's Z-score model as good predictable tools for financially distressed companies. Ullah et al. (2021) performed the study in banks at Pakistan to gauge their financial status using five-factor Altman Z-score model; they collected data of public, private and foreign banks from Pakistan Stock Exchange and observed private, and public banks were in a safe zone while the distress zone were occupied by foreign banks. Shahu (2019) tested the modified Altman Z-score model to examine financial distress of 18 banks listed in Nepal Stock Exchange Limited during the period of 2008 to 2014 and observed a lower financial distress risk of banks. Similarly, profitability, liquidity and size have a significantly positive effect over Z-score. Elia et al. (2021) explored the validity of Altman Z''-score model on the Lebanese Alpha banks (Association of Banks in Lebanon) over the period 2009 - 2018 to forecast financial distress and found the majority of Alpha Banks were in position of distress.

Gerantonis et al. (2009) have explored the prediction ability of Altman's Z-score model regarding the financial failures before it is happening. They considered Athens Stock Exchange registered companies for the data of the years 2002 to 2008 and observed the predictability of Altman's Z-score model in forecasting corporate failures at year first as 66%, year second as 52%, year third as 39% and year fourth as 20% prior to bankruptcy. The revised Altman Z'-score (1983) model is also established as corporate failure prediction tool, authors like Pitrouva (2012), Kumar et al. (2013), Chouhan, Chandra and Goswami (2014) have put forward the pertinent evidences.

Altman (1968) identified the major five ratios to forecast the financial failure via Z-score. $Z = 0.12 * X1 + 0.14 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5$. Where; X1 =working capital /total asset, X2 = retained earnings/total assets, X3 = earnings before interest and taxes/total assets, X4 = market value of equity/book value of debt, X5 = sales/total assets and Z = Z-score index. The value, $Z < 1.81$ (distress zone) indicates a firm may go bankrupt in the next 2 years, $Z > 2.99$ specifies non-insolvency (safe zone) and Z value between 1.81 and 2.99 informs the grey area.

After the given model, Altman (1983) made major correction. To incorporate private manufacturing firms in Z model, parameter X4 was replaced by book value of equity/total debts and so the Z-score model became $Z' = 0.717 * X1 + 0.847 * X2 + 3.107 * X3 + 0.420 * X4 + 0.998 * X5$. The

value, $Z' < 1.23$ indicates distress zone (high-risk to be bankrupted), the value; $1.23 < Z' < 2.9$ points grey zone (uncertain results) and the value $Z' > 2.9$ specifies safe zone or the healthy (low risk area). Altman's revised Z'' score (1993) model made correction over his 1983's Z' -score model to incorporate non-manufacturing companies and the companies of the emerging market. In this model the variables X_5 (sales/total assets) was skipped and model became $Z'' = 6.56 * X_1 + 3.26 * X_2 + 6.72 * X_3 + 1.05 * X_4$. The score, $Z'' < 1.10$ specifies the distress zone or bankrupt companies, $Z'' > 2.60$ indicates non-insolvent or healthy companies moreover, the Z'' score between of 1.10 and 2.60 informs undecided zone (grey area).

Whether the Altman's revised Z'' score (1993) model that incorporates non-manufacturing companies and the companies of the emerging market could judge the financial distress of Nepalese commercial banks, is the key issue of this research.

3. Research Methods

This research believes ontological assumption of objectivism. Similarly, epistemological notion is that the financial distresses can be measured through reliable tool of by Altman's revised Z'' score (1993) model. So, the positivism research philosophy has been focused. Further, the present study pursues deductive research approach to test Altman's revised Z'' score (1993) model that is using to explore financial distress of non-manufacturing business entities and companies of the emerging markets.

This research follows descriptive research design to assess potential financial distress of Nepalese commercial banks using Altman's revised Z'' score (1993) model. NRB Annual Report mid-July (2020) shows, total of 24 private commercial banks are in operation and among those 14 commercial banks have carried out their joint operation after the merger while remaining 10 commercial banks have not engaged in merger. This study has taken purposively 10 sample banks from joint operation after merger and the 6 banks that have not bonded in merging operation. Altogether, 16 Nepalese private commercial banks are opted conveniently for drawing inferences.

The Altman (1993) revised Z'' score model has been adopted to explore the plausible financial distress. $Z'' = 6.56 * X_1 + 3.26 * X_2 + 6.72 * X_3 + 1.05 * X_4$. The score, $Z'' < 1.10$ specifies the distress zone or bankrupt companies, $Z'' > 2.60$ indicates non-insolvent or healthy companies and the Z'' score between 1.10 and 2.60 informs undecided zone (grey area).

Since Altman (1968) chose the sample of 33 firms from each of the two groups (bankrupt and non-bankrupt) and examined the Z score model using the data of one financial statement prior to bankruptcy (p.5, p.11). With this baseline, the study used valid annual report (income statement and balance sheet) of year 2019-20 of respective banks as a secondary source of information. Nabil Bank, Bank of Kathmandu, Everest Bank, Himalayan Bank, NMB Bank, NIC ASIA Bank, Global IME Bank, Nepal Bangladesh Bank, Nepal Investment Bank, Mega Bank Nepal, Nepal SBI Bank, Prime Commercial Bank, Standard Chartered Bank, Kumari Bank, Laxmi Bank and NCC Bank are the sampled banks and focused to identify their status of distress.

4. Data Analysis and Results

Employing the Altman's revised Z'' score (1993) model, this chapter has focused to interpret the outcomes of financial data acquiring from 16 private commercial banks in Nepal.

Table 1. CA, CL, WC, TA, RE, BE, TD and EBIT of Selected Banks

Banks	Current Assets (CA)	Current Liabilities (CL)	Working Capital (WC)	Total Assets (TA)	Retained Earnings (RE)	Book-value of Equity (BVE)	Total Debt	EBIT
NABIL	233,733.43	203,852.82	29880.61	237721.26	3042.24	25,801.48	205,893.37	5,095.57
BoKL	107,931.18	93,446.69	14484.49	109,583.13	955.20	14,310.56	94071.51	2,127.70
EBL	180,859.85	144,761.20	36098.65	185,018.81	1,727.53	18,621.11	145830.05	3,571.81
HBL	151,360.33	132,091.53	19268.8	155,824.62	2,503.06	17,545.30	134,655.19	3,495.33
NMBBL	175,387.55	153,067.40	22320.15	179,423.37	964.01	20,866.46	155347.23	3,001.91
NIC ASIA	243,761.73	217,761.25	26000.48	251,852.89	1,693.78	17,235.54	227416.89	4,430.08
GIME	265,541.02	240,454.66	25086.36	274,082.96	1,618.56	29,017.95	241951.72	4,347.37
NBBL	87,084.82	73,335.86	13748.96	89,765.84	488.39	13096.40	75329.54	1,760.78
NIBL	197,143.97	168827.07	28,316.9	203,153.97	1,623.10	27,320.24	172,077.07	3,633.17
MEGA	152,616.63	135,605.04	17011.59	155,124.5	1,117.18	17,604.29	135605.04	2,156.9
SBI	129,794.90	112,332.38	17462.52	132,374.29	1,412.45	14,745.36	115360.72	2,220.41
PCBL	149,790.54	129,913.10	19877.44	152,219.67	1,764.35	20,545.93	129,913.1	3,270.23
SD.CH	115,638.37	99267.31	16371.06	116,434.05	1,521.08	15,101.56	99267.31	2,832.56
KBL	151,395.12	131,617.97	19741.22	153,811.47	743.00	17,085.81	134613.09	1,776.03
LBL	126,499.79	111667.39	14832.4	128,802.65	1,600.08	13,956.97	113675.59	2,114.88
NCC	93,748.95	81,727.23	12021.72	96,873.01	888.73	13,180.49	81727.23	4,031.98

Source: NRB Annual Report mid-July (2020)

Working Capital (WC) = CA (current assets) – CL (current liabilities). Retained Earnings (RE) is the part of profit that is retained by firm for future investment purpose. EBIT is operating income of the firms that refer the earning receipt from operating activities. Total liabilities include both the long term as well as the short term debts. Book value of equity (BVE) represents the book value of all common and preferred shares.

Table 2. X1, X2, X3, X4, X5 and Z'' of Respective Banks

Banks	Working capital/Total asset (X1)	Retained earnings /Total assets (X2)	Earnings before interest and taxes/ Total assets (X3)	Book value of equity/Total debts (X4)	Z'' (6.56*X1 +3.26*X2 +6.72*X3 +1.05*X4)	Score	Financial Position (distressed, healthy or undecided)
NABIL	0.125695994	0.0127975	0.021435	0.1253148	1.1419097		undecided zone
BoKL	0.132178101	0.0087167	0.019416	0.1521243	1.1857128		undecided zone
EBL	0.195108	0.0093371	0.019305	0.1276905	1.5741527		undecided zone
HBL	0.123656968	0.0160633	0.022431	0.130297986	1.1511065		undecided zone
NMBBL	0.124399347	0.0053728	0.016730875	0.134321	1.0870441		Zone of Distress
NIC ASIA	0.103236774	0.0067253	0.017589951	0.075788	0.8969398		Zone of Distress
GIME	0.091528346	0.0059054	0.015861511	0.119933	0.8521962		Zone of Distress
NBBL	0.153164723	0.0054407	0.019615	0.173855	1.3368593		undecided zone
NIBL	0.139386397	0.0079895	0.017884	0.1587675	1.2273057		undecided zone
MEGA	0.109664109	0.0072018	0.013904316	0.12982	0.9726229		Zone of Distress
SBI	0.131917761	0.0106701	0.016774	0.1278196	1.1470951		undecided zone
PCBL	0.130583912	0.0115908	0.021483623	0.158151	1.2048454		undecided zone
ST.CHD	0.140603715	0.0130639	0.024328	0.1521302	1.2881668		undecided zone
KBL	0.128580463	0.0048306	0.011546798	0.126925	1.0701016		Zone of Distress
LBL	0.115156016	0.0124227	0.016419538	0.122779	1.0351787		Zone of Distress
NCC	0.124097723	0.0091742	0.041621294	0.161274	1.2930218		undecided zone
Mean	.1293	.0092	.0198	.1361	1.1540		undecided zone
Aggregate Std. eviation	.02300	.00330	.00667	.02319	.17742		

Source: NRB Annual Report mid-July (2020)

The score, $Z'' < 1.10$ indicates distress, $Z'' > 2.60$ specifies non-insolvent or healthy companies and Z'' score between the number 1.10 and 2.60 notifies undecided zone or grey area. Table 2 points out the mean value of the Altman Z'' -scores 1.1540 that is under the grey area so it is undecided

to mention as it rests on distress zone but score quite close to the distress level. Commercial banks NMB, NIC Asia, Global IME, MEGA, KBL and LBL have their Z'' value less than 1.10 represents the higher possibility of financial distress.

It is notable that the $X1$ value (WC/TA) is positive which demonstrates the abundance of capital to invest for the study year 2019. Altman (2000) suggests, RE/TA ($X2$) as the measure which evaluates the accumulated profitability of an organization and shows earning capability of a firm. It also indicates the degree of financing of the total assets through the earnings that are not allocated as dividends to shareholders. It is quite low indicating the value 0.0092. The $EBIT/TA$ ($X3$) ratio gauges the efficiency of the total assets to generate profits from operating activities; it evaluates the earning power of the company. Low value of $EBIT/TA$ suggests inefficiency of a company in generating profits via its assets. Table 2 shows disappointing figures. Book value of equity to total debt BVE/TD ($X4$) ratio has a negative effect over firms' financial distress so higher value of $X4$ exhibits greater chances of companies' financial distress.

The Financial Stability Report of NRB published at July 2020 has revealed the fact about the financial status of Nepalese Commercial banks. It put forwards the figures of net profit of the commercial banks that has increased by 22.47 percent to NPR 64.45 billion in FY 2018/19, and consistently all the commercial banks have registered positive profit during the review period. Whatever the statistics of current research speaks, no single evidence of financial distress has been observed or announced by Nepal Rastra Bank (Central Bank of Nepal) till the date. So, it is concluded that the Altman's revised Z'' score (1993) model that was prescribed for non-manufacturing companies as well as to companies of emerging market could not estimate the financial distress of Nepalese commercial banks.

The given research finding is consistent with the results concluded by Ullah et al. (2021) who performed the study in banks at Pakistan and observed private banks were in a safe zone. On the other hand, the findings of the study is debatable to the study of Elia et al. (2021) who attested the validity of Altman Z'' score model on the Lebanese Alpha banks.

5. Implication of the Study

Charitou et al. (2004) urge the Altman's Z-score model as the tool to detect bankruptcy and equally employed by practitioners as well as the academics. Such accounting-based model that estimates failures or distress can be implemented by banks or financial institutions for managerial decision making like calculation of provision, evaluation of business loans, and development of investment criteria. Altman's Z-score model evaluates financial soundness of the firm so its periodic evaluation could enable the management realizing sensibilities of the situation and taking corrective action to limit the failure. Aziz and Dar (2006) suggest the early sign of financial failures help the firm undertaking timely initiation to check financial insolvency and protecting from potential bankruptcy. Further, Elia et al. (2021) suggest the Z'' score model as crucial indicator for auditors, financial managers, investors or lenders who use the banks' financial statements to make the right judgments in case of financial turmoil.

Theoretically the Altman's Z'' score model can predict the probability of a business organization moving toward bankruptcy within a given time (about two years) for non-manufacturing and companies of emerging market; however, the study result shows inefficiency of given model in predicting financial distress regarding banking industry. Practically, the managers could elaborate different ratios used in Z'' model to estimate financial strength of organization rather considering entire model.

6. Limitation and Areas for Future Research

Altman's Z" score model is designed to predict financial distress for non-manufacturing and companies of emerging market, and current research paper has the limitation that it is based on given academic base-ground. This paper has limited to selected commercial banks operating in Nepal and has considered the data of single year, so the judgments of this research paper should be carefully analyzed. Limited ratios and figures in given model need to be further tested and validated. Human part of the organizations is completely isolated in model while it has the significant effect over the profitability. To test the validity of Altman's Z" score model, further researchers are suggested to carry out similar research over Nepalese manufacturing industries by categorizing bankrupted and non-bankrupted companies considering data of 10 to 15 years.

Conflict of Interest

Author declared no conflict of interest while preparing this article.

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