Determinants Of Financial Distress of Commercial Banks of Nepal

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Abstract

According to bankers, economists, and regulators, bank runs, and failures are costly to the economy. Thus, banking stability is of utmost importance. Identifying banks more prone to financial distress is urgent before the effects of their financial instability are felt in the economy. Nonetheless, a great deal of research has been done on the topic, and the findings of these studies are highly inconsistent. Based on this scenario, this paper used the existing model of Altman's Z-score and another important variable from previous studies. It also provides a systematic framework for predicting the financial distress of Nepalese Commercial Bank.

The study selected 12 commercial banks and collected data from 2018/19 to 2022/23. The study found that, on average, the Z-score of Nepalese commercial banks is 32.14, more significant than the cutoff point Z> 2.99. This indicates that the financial institution is in a good position and safe from financial problems. Besides, the study chose four accounting variables suggested by Altman (1968) and found that the liquidity ratio, reserve ratio, return on asset ratio, and book-to-market ratio have positive and significant impacts on the Z-score; Leverage has a positive but insignificant impact on the Z-score. However, size has a negative and insignificant impact on the Z-score. Besides, this study conducted a multicollinearity test, which shows all the values of individual variables are less than 10, indicating no multicollinearity problem in the independent variable.

Keywords: Financial distress (z-score), liquidity (liq), reserve ratio (res), return on asset (roa), leverage (lev), book to market ratio (bm), size(sz).

Introduction

An impulsive purchase occurs when a buying decision is made spontaneously, just before the transaction takes place. It involves acquiring a product or service without prior

Financial distress is when a debtor cannot fulfill its obligations due to a deficiency or lack of funds, resulting in the company's total liabilities outweighing its total assets and preventing it from achieving its economic goal (Khafid et al., 2019). Financial distress is a risk of bankruptcy based on liquid assets and credit availability (Hendel, 1996). It is a situation in which a firm has operational, managerial, and financial difficulties. The reason for this financial distress can be anything, including declining or persistently low margins, profits, cash flows, financial leverage, and liquidity of these firms. The risk of mild financial failure resulting from bank losses and liquidity problems may go up to bankruptcy. Financial distress is important to managers, creditors, auditors, and financial analysts. Zmijewski (1984) defines financial distress as filing a bankruptcy petition. However, many financially distressed companies were not entitled to bankruptcy due to acquisitions or privatization. Waqas and Md-Rus (2018) stated that predicting financial distress remains an essential area of focus for researchers due to its vital importance for firms and stakeholders, including investors, lenders, and participants in capital markets in general

. Banks play a critical role in providing financing channels. They are a crucial medium for stabilizing the financial order and promoting industrial development. The issue of financial distress or failure and bankruptcy is very important in the banking sector. Failure of banks may lead to economic crises (Demiguc and Detraigaialche, 1998). The disasters of a bank failure begin with a bank run, in which all depositors windrow their money from the bank simultaneously, resulting in a general economic downturn.

Most studies on financial distress and the methods mentioned above have taken place in developed countries like Australia (Agarwal and Taffler,

2008) and the United States (Agarwal and Taffler, 2008; Altman, 1968; Beaver, 1966; Dichev, 1998; Ohlson, 1980; Shumway, 2001). Since then, many contributions have been made in this area (Balcæn and Ooghe, 2006; Ohlson, 1980; Poddighe and Madonna, 2006; Ravi et al., 2007). It is important to note that developed countries have different economic structures, clear bankruptcy procedures, and defined laws related to bankruptcy. In contrast, the developing and under-developed countries lack such bankruptcy laws and procedures (Waqas and Md-Rus,2018).

Predicting financial distress using the existing well-known Z-score of Altman (1968) or O-score of Ohlson's logit model (Ohlson, 1980) may not work for the least developed or developing countries as these models were developed for developed countries. Altman, Iwanicz-Drozdowska, Laitinen, and Suvas (2017) stated that one global financial distress model cannot work globally. Hence, it is essential to analyze these models with country-specific data. Although Nepal was categorized as the least developed nation by the United Nations in 2010, the Nepalese capital market is developing significantly in terms of trading volumes and its tremendous growth potential. Its size and market capitalization are growing day by day. Therefore, this study focuses on finding the determinants of distress risk using a modified Altman Z score as a proxy of bankruptcy risk. After that, the study proceeds in the following manner. The following section presents a literature review. Section II briefly method used. The results are presented in Section IV, while the conclusion and discussion are reported in Section V.

Under such circumstances, Nepal was categorized as the least-developed nation by the United Nations in 2010. The Nepalese capital market is developing significantly in terms of trading volumes and its tremendous growth potential; it is imperative to analyze these financial distress prediction models using data from Nepalese firms (Shahu, 2019). There needs to be a more proper analysis of financial distress in the Nepalese context; Pradhan (2006) provided behavioral evidence from practicing Nepalese business

executives, though the study used primary data, which is based on the opinion of executives rather than actual financial data. Similarly, Shahu (2019) analyzed the impact of financial distress by using Altman's Z-score model. However, this study used different accounting ratios to predict financial distress, such as market equity, to measure size, book-to-market ratio, liquidity ratio, leverage, and ROA.

On the other hand, the prediction of z-score calculation is based on distress risk value. The existing literature (Kevin et al., 2009; Jahur and Quadir, 2012; Adeyemi, 2011) indicates capital adequacy's importance and significant role in measuring financial distress. Hence, this study tries to fill the existing research gap by using Altman's z-score model by using four accounting variables such as liquidity ratio, reserve ratio, solvency ratio, and return on assets, to predict financial distress and other two important variables defined by literature such as leverage and capital adequacy ratio to predict financial distress of Nepalese commercial bank.

Literature Review

Beaver (1966) and Altman (1968) provided insightful conclusions and apply accounting models to predict financial distress. After that, Altman et al. (1977), Taffler (1982), and Zmijewski (1984) are the early financial distress prediction studies, and a few recent studies by Altman and Hotchkiss (2006); Altman et al. (2009) evaluated the reorganization process of firms for the post-bankruptcy period by using a variant of Altman's renowned 1968 Z-score model. The current study relies on identifying the impact of financial distress on the firm's performance. According to (Shaukat and Affandi, 2015), a significant relationship exists between financial distress and financial performance. Most recent studies, however, measure financial distress risk based on market information. For instance, Campbell et al. (2008) utilized a hazard model's estimated probability of financial distress to examine distress risk-priced equity markets. Furthermore, Shumway (2001), Agarwal and Taffler (2007), and Agarwal and Taffler (2008) used discrete hazard

methodologies to evaluate accounting-based and market-established models for UK enterprises. There is a wealth of information on the effectiveness of various methodologies, including hazard and logistic regression models, in the United States and the UK. Ohlson (1980) built a risk prediction model using 105 industrial companies. Similarly, Platt and Platt (1991) showed that the performance of industry-specific variables is better than that of company-specific variables. Adnan Aziz and Dar (2006) examined 98 financial distress predictions. They argued the importance of financial ratios, namely profitability, liquidity, leverage, and cash flow ratios, in predicting financial distress. However, most studies talk about the model developed by Professor Edward Altman to predict financial distress, such as Altman's Z score (Yahaya et al., 2017; Liang and Pathak, 2016; Affandi, 2015; Yadiati, 2017). Similarly, Rahman, Tan, Hew, and Tan (2004) discovered that financial indicators reflect capital sufficiency, loan management, and operating efficiency, which are critical to Asian banks' financial health. Previous studies have proven the efficacy of Altman's Z score model in bankruptcy prediction in the financial sector (Nwidobie, 2017; Egbunike and Ibeanuka, 2015; Adeyeye and Migiro, 2015; Adeyeye and Oloyede, 2014; Pam, 2013; Unegbu and Adefila, 2013). Therefore, this study also focused on Altman's Z score, capital adequacy ratio, size, and leverage to predict financial distress.

Several previous studies have investigated whether various financial ratios are influential variables for predicting and explaining the financial distress of banks. Al-Saleh and Al-Kandari (2012) analyzed that Investment in Securities to Total Assets, Loans to Total Assets, and Loans to Deposits ratios are considered the best predictors of bank distress. Valahzaghard and Bahrami (2013) found a meaningful relationship between default probability and management quality, earning quality, and liquidity quality. When predicting failure at longer horizons, the most persistent firm characteristics, market capitalization, the market-book ratio, and equity volatility become relatively more significant (Campbell et al., 2006). Studies Determinants of Distress Risk

of Nepali Commercial Banks: Shahu documented the evidence that financial distress increases if the leverage increases. The greater the leverage, the greater the company's risk and the greater the probability of the company experiencing financial distress. Previous studies (Chen and Lee, 1993; McEwen, 2001; Elloumi and Gueyee, 2001) showed that liquidity and profitability had an essential role in resilience into bankruptcy. Firms' profitability negatively affects financial distress (Donnato and Nieduu, 2014; Parker et al., 2011). According to the doctrine of too big to fail, bigger firms have a lower probability of failure. Contrary to this, empirical studies like Chancharat (2008) and Parker et al. (2011) found that size positively affects firms' financial distress.

There were very few literature on financial distress that has been focused on the Nepalese context; Pradhan (2006) provides behavioral evidence on the importance of financial ratios in predicting financial distress in Nepalese business executives by conducting studies and gathering primary data generated through questionnaires. The two-part questionnaire was first distributed in June 1992 to executives of 78. The study indicated the consensus on net profit margin and short-term liquidity ratios as the important indicators of financial distress. Similarly, Shahu (2019) examined the factors affecting banks' distress risk. Using a modified Altman Z score to measure the distress risk, the study employed secondary data from 18 banks listed in NEPSE for the study period from 2008 to 2014. The study found that liquidity, profitability, and size significantly positively affect the z score, indicating lower distress risk of firms.

Similarly, Niroula(2021) examined the four ratios of the Altman z-Score and two more ratios, capital adequacy and leverage ratios, affecting distress risk. Using a modified Altman Z score to measure distress risk, the study employed secondary data from 15 banks listed in Nepal Stock Exchange Limited for the study period from 2011 to 2019. The study found that the reserve, return on asset, solvency, and capital adequacy ratios significantly

affect the z score, indicating lower distress risk of firms. However, leverage has a negative but not significant impact on Z-score.

Research methodology

This study aims to test Nepalese commercial bank's financial distress. The financial distress of a bank is captured by Altman's Z-score, leverage, size, and book to market ratio. The study population includes the entire commercial bank listed on the Nepal Stock Exchange (NEPSE). Currently, there are 19 entities listed in NEPSE as per the annual report published by NEPSE for the year 2079/80. There are 19 commercial banks in Nepal; 12 commercial banks have been considered for this study. The data is collected for five years, starting from 2018/19 to 2022/23. The data for the five years for firms should have been 60 firm years. All the data were hard collected from the annual report of the corresponding firm.

Dependent Variable

The dependent variable in this study is Financial Distress. Financial Distress is a condition when the company is experiencing financial difficulties. The dependent variable is influenced by four accounting variables mentioned by Altman (1966) and two other important variables such as capital adequacy ratio and leverage ratio, mentioned by other literature such as Platt and Platt, 1991; Adnan et al., 2006; Charitou et al., 2004; Altman, 1984; Andualem and Rao, 2017; Muhammad et.al, 2019). The study used the Altman Z-score formula to calculate the dependent variable: Z-score= 1.2 liq + 1.4 res + 3.3 roa + 0.6 sol.

Independent variable

The study used accounting ratios such as Liquidity ratio, reserve ratio, return on assets, size, book-to-market ratio, and leverage ratio to predict bank financial distress. The basis for the calculation of this variable is shown below.

Table 1 : Description of variable

Variables	measures
Dependent variable	
Distress risk(D/risk)	Altman's Z score
Independent variable	
Size (sz)	Total asset
Book to market ratio (BM)	Book value/market value
Liquidity (liq)	current ratio
Leverage(lev)	debt/total asset
Return on asset (roa)	net profit/totak asset
Reserve(res)	Retain earning/total asset
e_t	Error term

Empirical Model of study

The general model of the study is as follows:

Models have evolved for financial distress prediction from the 60s to date. Altman's Z score used Multivariate Discriminant Analysis (MDA) to develop a model capable of predicting corporate failure (Altman, 1968). The model predicted a company's health status based on a discriminant function of the form: Z score (model) Z= 1.2 liq + 1.4 res + 3.3 roa + 0.6 sol

Were,

liq	Liquidity	Current ratio
res	Reserve	Retain earning/total asset
roa	Return on asset	Netprofit/total assets
sol	Solvency	Capital adequacy ratio

The results are interpreted and analyzed according to the specific criteria. If the value of ·Z< 1.80, Bad Indication: The financial institution will most likely be heading towards bankruptcy problem. Necessary actions are needed to avoid the worst situation. ·Z> 1.80 and 2.99 The financial institution is in a good position and safe from financial problem ·Z> 2.99 The financial institution is in a good position and safe from financial problem.

Hence, the model of this study can be presented as below:

Model

$$Z\text{-score} = \alpha + \beta 1liq + \beta 2res + \beta 3roa + \beta 4lev + \beta 5bm + \beta 6sz + \varepsilon i$$

For all of the equations, the notation of the variable indicates;

Z-score is calculated by using the above-mentioned four accounting variables

liq is a liquidity ratio calculated as the current ratio

res is a reserve ratio calculated as Retained earnings/ Total assets

roa is a return on asset calculated as Net profit/Total assets

lev is a leverage ratio calculated as total debt/total assets

bm is a book to market ratio calculated as book value/market value

sz is size calculated as a log of total asset and,

εi, is the error term

Results and findings

The study's results and findings have been presented in this section. This includes descriptive statistics, correlation analysis, tests of multicollinearity, and regression analysis.

Descriptive statistic

First, the summary statistics have been presented as follows;

Table 2 : *Summary Statistics*

Variable	Minimum	Maximum	Mean	Std. Deviation
liq	.92	36.21	15.16	11.70
res	-.98	2.26	1.03	0.54
roa	.14	2.77	1.30	0.47
lev	.00	2.81	0.28	0.65
bm	5.87	1074.06	91.22	173.99
sz	35	39	37.31	0.748
z score	12.11	61.16	32.17	14.87

Source: Author's Own Calculation

The descriptive statistics have been summarized in Table 2. The Table shows the mean, median, minimum, and maximum values with standard deviation. Liq is the current ratio, which ranges from a minimum of 0.92 percent to a maximum of 36.21 percent, leading to an average of 15.16 percent with a standard deviation of 11.70 percent. Res is the ratio of retained earnings to total assets; it ranges from a minimum of -0.98 percent to a maximum of 2.26 percent, with mean and standard deviations of 1.03 and 0.54 percent, respectively. Similarly, roa is a ratio of net profit total assets, which ranges from a minimum of .14 to a maximum of 2.77 percent with a mean and standard deviation of 1.30 and 0.47, respectively. Lev's total debt/total asset ranges from 0.00, i.e., for an unleveled firm, to 2.81 percent, leading to a mean of .28 and a standard deviation of 0.65. bm is a book-to-market value ratio that ranges from a minimum of 5.87 percent to a maximum of 1074.06 percent with a mean and standard deviation of 91.22 percent and 173.99 percent. Sz's size ranges from 35 to 39, leading to a mean of 37.31 and a standard deviation of .748, respectively. Similarly, the Z-score ranges from a minimum of 12.11 to a maximum of 61.16 with mean and standard deviation of 32.17 and 14.87, respectively. Similarly, the mean value of the z-score shows that, on average, the Z-score is >2.99, which means that overall, financial institutions are in a good position and safe from financial problems.

Correlation Analysis

In this section, we present the correlation coefficients between the four accounting ratios and Z-scores and also the correlation between explanatory variables to show the direction and the strength of the relationship between any pair of explanatory variables as well as the explained variable by using a correlation matrix.

Table 3 : Correlation Analysis

	z score	liq	res	roa	lev	bm	sz
z score	1						
liq	.984**	1					
res	.285*	.150	1				
roa	.354**	.206	.590**	1			
lev	-.108	-.096	-.121	-.147	1		
bm	.242	.263*	-.014	-.223	.152	1	
sz	.107	.159	-.265*	-.162	.139	.133	1

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

*. Correlation is significant at the 0.05 level (2 tailed).

Table 3 shows the correlation coefficients of the variables considered for the study. The Table reveals that liquidity, return on asset, and reserve ratio have a significant positive relationship with the z score, indicating a good financial position. Likes-wise, book-to-market ratio and size have an insignificant positive relationship with the z score. Leverage has an insignificant negative relationship with the z score.

Multi Collinearity Test

The test statistic of correlation coefficients among the variables used in this study, as suggested by Gujarati & Porter, (2010) can be seen from the above table that the correlation coefficient suggests no multicollinearity problem, except for the correlation between liquidity and Z-score; there is no correlation coefficient greater than (0.80). Variance Inflation Factor (VIF) is another way to test the existence of a multicollinearity problem. In other words, it is detecting whether there is multicollinearity or not. (VIF) measures how much collinearity can increase the variance of an estimated regression coefficient. The cut-off point for (VIF) is 10 (Asteriou & Hall, 2007; Wooldridge, 2013).

Table 4 : Variance Inflation Factor Analysis

Variables	VIF
Liq	1.228
Res	1.661
Roa	1.748
Lev	1.071
Bm	1.237
sz	1.148

Minimum possible value = 1.0

Values > 10.0 may indicate a collinearity problem

VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient between variable j and the other independent variables

As can be seen from Table (4), there is no multicollinearity problem among the variables used in this study, where the largest (VIF) is for the roa, which is only 1.748. The VIF value of liq (liquidity) is 1.228. Similarly, the VIF value for res (reserve ratio) is 1.661. Likewise, the VIF value for financial leverage (LEV) is 1.071 only, and the value for a book-to-market value and size is 1.237 and 1.148, respectively, which are smaller than 10. Therefore, this model does not have a multicollinearity problem.

Multiple Regression Analysis

It shows the extent and direction of the linear relationship between liquidity, reserve ratio, return on asset, leverage ratio, book-to-market ratio, size, and financial distress of Nepalese commercial banks. The regression result is indicated in Table 5.

Table 5 : Regression analysis with Z-score

Model	Intercept	Regression coefficients						Adj r^2	SEE	f-value
		Liq	Res	Roa	Lev	Bm	sz			
a	13.639 (.045)	1.2 (.000)	1.899 (.000)	3.881 (.000)	.164 (.406)	.002 (.023)	-.184 (.302)	.996	.944	2427.649 (.000)
b	13.031 (.064)	1.209 (.000)	2.010 (.000)	3.630 (.000)	.234 (.249)		-.161 (.383)	.966	.983	2689.567 (.000)
c	6.972 (.000)	1.207 (.000)	2.068 (.000)	3.639 (.000)	.211 (.293)			.966	.981	3375.566 (.000)
d	7.096 (.000)	1.206 (.000)	2.056 (.000)	3.608 (.000)				.996	.982	4490.114 (.000)
e	23.094 (.008)	1.201 (.000)		5.142 (.000)	.164 (.406)	.003 (.009)	-.429 (.061)	.993	1.244	2092.054 (.000)
f	13.216 (.000)	1.250 (.000)						.968	2.668	1774.290 (.000)
g	24.120 (.000)		7.825 (.027)					.065	14.375	5.122 (.027)
h	17.684 (.002)			11.182 (.006)				.110	14.025	8.304 (.006)

Table 5 indicates that the beta coefficient for the liquidity ratio to the Z-score is positive and significant. This shows that the higher the liquidity ratio, the higher the z-score. The beta coefficient for the reserve ratio is positive and significant. This shows that the higher the reserve ratio, the higher the z-score. This finding is consistent with (Waqas and Md-Rus,2018). Similarly, the beta coefficient for return on assets is positive and significant with Z-Score. This shows that an increase in return on assets (ROA) leads to an increase in Z-score. The findings are consistent with Altman's findings (2017). The beta coefficient for book value of equity to total liability is positive and significant. This shows that an increase in the book value of equity leads to an increase in Z-score. This finding is similar to the findings of (Darmawan and Supriyanto, 2018). The beta coefficients for financial leverage are positive and

insignificant. Likewise, the beta coefficient for size is negative and insignificant at a 1 percent level of significance.

Conclusion

Financial distress is a situation in which a firm has operational, managerial, and financial difficulties. The reason for this financial distress can be anything, including declining or persistently low margins, profits, cash flows, financial leverage, and liquidity of these firms. Therefore, this study used Nepalese commercial banks to investigate financial distress. Twelve listed commercial banks were considered for the study; data included a period of 5 years, ranging from 2018/19 to 2022/23, are included in the data set to conduct panel data analysis. The major proxies are taken to measure financial distress, and they are liquidity, reserve ratio, return on asset, book-to-market ratio, financial leverage, and size. Four accounting ratios were taken to calculate the Z-score: liquidity ratio, which is measured as working capital to total assets; reserve ratio, which is measured as retained earnings to total assets. Another ratio is the return on assets, which is measured as the net income to total assets ratio, and the solvency ratio, which is measured as the capital adequacy ratio. The study carried out descriptive analysis, correlation analysis, VIF test, and regression analysis to analyze the data. Analysis of the correlation of Z-score and liquidity, reserve ratio, and return on assets a positive and significant relationship. The relationship between book-to-market ratio and size is positive and insignificant compared to the Z-score. However, the relation between financial leverage and Z-score is negative and insignificant. The study conducted a multicollinearity test of each individual independent variable, which indicates the value is less than 10, which shows the model does not exist in multicollinearity. Overall, the impact liquidity ratio, reserve ratio, return ratio, and book-to-market ratio have a positive impact on Z-score; this indicates that an increase in these ratios leads to an increase in Z-score value. The impact of financial leverage on the Z-score is positive but insignificant. The impact of size with Z-score is negative and

insignificant. Nepalese commercial banks are highly regulated firms; during the period of the study, the central bank mandated them to hike the paid-up capital fourfold, which eventually led to various mergers and acquisition activities by the commercial bank. These regulatory changes could have affected their capital structure and were not considered. Such influences were not considered. Furthermore, it is also essential to see financial distress in other sectors of Nepal, such as insurance, manufacturing, hydropower, and other financial institutions.

References

Abreu, M., Mendes, V (2000). Commercial bank interest margins and profitability: Evidence for some EU countries, presented on the 50th International Atlantic Economic Conference

Adeyeye, P. O., Migiro, S. O. (2015). An investigation on Nigerian banks‟ status using early warning signal. Banks and Bank Systems, 10(1), 42-53.

Adeyeye, P. O., Oloyede, J. A. (2014). Forecasting Bank Failure in Nigeria: An application of enhanced discriminant model. International Journal of Finance and Accounting, 3(1), 37-48.

Adnan, M., Dar, H. A. (2006). Predicting corporate bankruptcy: Where we stand. The International Journal of Business in Society, 6(1), 18–33. doi:10.1108/14720700610649436

Agarwal, V., Taffler, R. (2008). Does financial distress risk drive the momentum anomaly. Financial Management. 37(3), 461- 484.

Altman, E. (1968).Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. Journal of Finance, 23(3), 589-609.

Altman, E. and Hotchkiss, E. (2006), Corporate Financial Distress and Bankruptcy, 3rd ed., Wiley Finance, Hoboken, NJ.

Altman, E. I. (2000). Predicting financial distress of companies: Revisiting the Z-score and Zeta models

Altman, E.I., Sabato, G. and Wilson, N. (2010). The value of non-financial information in small and medium-sized enterprise risk management. The Journal of Credit Risk, 6(2), 1-33.

Andualem, U.B., Rao, K.S.(2017). Financial Inclusion in Ethiopia. International Journal of Economics and Finance, 9(4),191-210. https://doi.org/10.5539/ijef.v9n4p191.

Babatunde, A. A., Akeju, J. B., Malomo, E. (2017). The effectiveness of Altman's z-score in predicting bankruptcy of quoted manufacturing companies in Nigeria. European Journal of Business, Economics and Accountancy, 5(5), 75-83.

Beaver William H.(1966).Financial Ratios As Predictors of Failure. Journal of Accounting Research, 4(1966), 71-111.

Charitou, A., Neophytou, E., Charalambous, C. (2004). Predicting corporate failure: empirical evidence for the UK. European Accounting Review, 13(3), 465-497.

Chiaramonte, L., Casu, B. (2017). Capital and liquidity ratios and financial distress: Evidence from the European banking industry. British Accounting Review, 49(2), 138-161.

Cinca, C.S., Nieto, B.G. (2013). Partial Least Square Discriminant Analysis for bankruptcy prediction. Decision Support System, 54,1245-1255

Darmawan, A., Supriyanto, J. (2018). The effect of financial ratio on financial distress in predicting bankruptcy. Journal Of Applied Managerial Accounting, 2(1),110-120

Douglas, G. (2002). The End of Bankruptcy. Law and Economic review, 784-785.

Egbunike, A. P., Ibeanuka, B. C. (2015). Corporate bankruptcy predictions: evidence from selected banks in Nigeria.

Gyawali, S. (2023). Exploring financial distress through Altman Z" score: example of selected private commercial banks in Nepal. Journal of Emerging Management Studies Volume 1, Issue 1: 94-107.

Khafid,M., Tusyanah, T., Suryanto, T.(2019). Analyzing the determinants of financial distress in Indonesian mining companies. International Journal of Economics and Business Administration,3(4),353-368

Liang, F. S., Pathak, S. (2016). Financial health and corporate performance–a comparison of manufacturing companies in China and India. Journal of Asian Development, 2(1), 18-29.

Madhushani, I. K. H. H., Kawshala, B. A. H. (2018). The impact of financial distress on financial performance: Special reference to listed nonbanking financial institutions in Sri Lanka. International Journal of Scientific and Research Publications, 8(2), 393-405.

Masdupi, E. (2018). The influence of liquidity, leverage and profitability on financial distress of listed manufacturing companies in Indonesia. Advances in Economics, Business and Management Research, 57, 223-228. https://doi.org/10.2991/ piceeba-18.2018.51

Muhammad, K., Tusyanah, T.,Suryanto, T.(2019). Analyzing the determinants of financial distress in Indonesian mining companies. International Journal of Economics and Business Administration, 3(4), 353-368

Niroula, Ambika. (2021). Determinants of financial distress of Nepalese commercial banks. https://www.researchgate.net/publication/353572656

Nwidobie, B. M. (2017). Altman's Z- score discriminant analysis and bankruptcy assessment of banks in Nigeria. Covenant Journal of Business and Social Sciences, 8(1), 1- 15.

Ohlson, J.A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. Journal of Accounting Research, 18(1), 109-131.

Pam, W. B. (2013). Discriminant analysis and the prediction of corporate bankruptcy in the banking sector of Nigeria. International Journal of Finance and Accounting, 2(6), 319- 325.

Platt, H.D., Platt, M.B. (1991). A note on the use of industry-relative ratios in bankruptcy prediction. Journal of Banking and Finance, 15(6), 1183-1194.

Pradhan, R.S.,(2006). A Stability of the consensus of financial ratios as predictors of financial distress in Nepal. Research in Nepalese Finance,2(1),1-10

Salim, M., and Yadav, R. (2012). Capital Structure and Firm Performance: Evidence from Malaysian Listed Companies. Procedia-Social and Behavioral Sciences, 65, 156-166.

Shahu, D.K. (2019). Determinants Of Distress Risk Of Nepali Commercial Banks. THE BATUK : A Peer Reviewed Journal of Interdisciplinary Studies,5(2),1-13

Shahzad, S.J., Ali, P., Ahamad,T., Ali, S. (2012). Financial leverage and corporate performance: Does financial crisis owe an explanation?

European Journal of Business and Management, 11(1),67-90 Shaukat, A., Affandi, H. (2015). Impact of financial distress on financial performance - A study related to Pakistani corporate sector. International Journal of Current Research, 7(2), 12991 12996.

Shumway, T. (2001), Forecasting bankruptcy more accurately: A simple hazard model. The Journal of Business, 74(1), 101-124. Taffler, R.J. (1982). Forecasting company failure in the UK using discriminant analysis and financial ratio data. Journal of the Royal Statistical Society, 145 (3), 342-358

The effect of leverage, firm size and earning persistence on earning response coefficient with profitability as moderating variable on LQ45 companies listed in Indonesia Stock Exchange - Universitas Pelita Harapan Institutional Repository. http://repository.uph.edu/41274

Unegbu, A., Adefila, J. (2013). Efficacy assessments of Z-Score and operating cash flow insolvency predictive models. Open Journal of Accounting, 3, 53-78. DOI: 10.4236/ojacct.2013.23009.

Waqas, H., Md-Rus, R. (2018). Predicting financial distress: Importance of accounting and firm specific market variables for Pakistan's listed firms. Cogent Economics and Finance, 6(1)1-16 DOI: 10.1080/23322039.2018.1545739

Yahaya, H. U., Nasiru, M. O., Ebgejiogu, O. N. (2017). Insolvency Prediction Model of Some Selected Nigerian Banks. International Journal of Statistics and Applications, 7(1), 1-11.

Zmijewski, M. (1986). Methodological Issues Related to the Estimation of Financial Distress Prediction Models. Journal of Accounting Research, 22,59-84

Zmijewski, M. E. (1984). Discussion of Methodological Issues Related to the Estimation of Financial Distress Prediction Models. Journal of Accounting Research, 22,59- 83 DOI: 10.2307/2490859