



AENSI Journals

Australian Journal of Basic and Applied Sciences

ISSN:1991-8178

Journal home page: www.ajbasweb.com



A Conceptual Study on Financial Distress of Takaful Firms in Malaysia

¹Nur Liyana Mohamed Yousop, ¹Norhasniza Mohd Hasan Abdullah, ¹Nur'asyiqin Ramdhan, ¹Zuraidah Ahmad, ¹Zuraidah Sipon, ¹Norashikin Ismail, ²Suhana Mohamed, ³Assoc. Prof. Dr. Haliza Hirza Jaffar

¹Department of Finance, Faculty of Business Management, Universiti Teknologi MARA, Segamat Campus, Malaysia.

²Department of Finance, Faculty of Business Management, Universiti Teknologi MARA, Johor Bahru Campus, Malaysia.

³Academy of Language Studies, Universiti Teknologi MARA, Johor Bahru Campus, Malaysia.

ARTICLE INFO

Article history:

Received 19 October 2014

Received in revised form

21 November 2014

Accepted 25 November 2014

Keywords:

Financial Distress Financial Ratios

Capital Structure Altman Z-Score

Takaful

ABSTRACT

Background: Financial distress can be defined as a circumstance where a company cannot meet nor has difficulty in paying off its current financial obligations. There are several issues that are utmost relevance with factors that affect the firms' financial distress such as high leverage, cash shortage and risk management. Given that, in many cases, financial distress may lead to firm's insolvency. Takaful is a type of Islamic insurance, where members contribute money into a Sharia pooling system in order to guarantee each other against loss or damage. Takaful operators also cope with financial distress such as low capital levels, distressed asset values and difficult capital markets. Therefore, since it is difficult to them to predict financial distress, this paper provides a moderate attempt to understand the feasibility of using financial ratios, capital structure and Altman Z-score as an empirical approach to predict Takaful's financial distress in future.

© 2014 AENSI Publisher All rights reserved.

To Cite This Article: Nur Liyana Mohamed Yousop, Norhasniza Mohd Hasan Abdullah, Nur'asyiqin Ramdhan, Ahmad, Zuraidah Sipon, Norashikin Ismail, Suhana Mohamed, Assoc. Prof. Dr. Haliza Hirza Jaffar., A Conceptual Study on Financial Distress of Takaful Firms in Malaysia. *Aust. J. Basic & Appl. Sci.*, 8(20): 15-21 2014

INTRODUCTION

The Malaysian Islamic insurance or known as 'Takaful' industry has experienced rapid growth and innovation since its inception 28 years ago. The development of Takaful industry was inspired by the prevailing needs of Muslims for Shariah compliant alternative to conventional insurance. This was achieved through the concerted efforts of Bank Negara Malaysia and the Takaful operators in developing a vibrant, flexible and efficient Takaful industry. The emergence of Takaful is consistent with the principles of social security under Islamic system. It implies the concept of risk sharing among Muslims to provide mutual help and protection among the Ummah. Inconsistent with risk the sharing principle, the tabarru fund is created in conducting Islamic insurance operations by relying the principle of mutuality, solidarity and brotherhood as core elements.

In order to expand businesses, individuals and corporations take the financial opportunities that exist around them through the process of borrowing and lending. Depending on their current capacity and capability, they presume financial commitments and risks in fulfilling the requirements for future obligations. Insolvency is a general term used to describe a debtor's legally declared inability to pay debts as they fall due (Smith, M., C. Graves, 2005). The solvency of an insurance company corresponds to its ability to pay claims. In the other words, solvency ratio is a way investors can measure the company's ability to meet its long term obligation. According to (Gour, B. and M.C. Gupta, 2012), an insurance company needs to hold an extra capital and are expected to maintain 150% solvency margin as the higher the ratio the better equipped a company is to pay off its debts and maintain its sustainability in the industry. Besides, (Jones, S. D.A. Hensher 2004) had specified the key features for minimum solvency requirements. For example, Takaful companies must adopt a total balance sheet approach to identify the interdependence between assets, liabilities, regulatory solvency requirements for participant's risk fund and the shareholders' funds on the Takaful operator.

Insolvency problem may lead to the financial distress. An increase in financial distress, especially within the finance sector noticed from 1980's. The staging alarm for Takaful Company on their financial distress still inconclusive since various factors has not been identified using appropriate different models. Even though the achievement of the Takaful industry over the past five years has witnessed a significant increase in gross written contributions research studies, however, there is deficiency research done on Takaful firm's distress.

Corresponding Author: Nur Liyana Mohamed Yousop, Department of Finance, Faculty of Business Management, Universiti Teknologi MARA, Segamat Campus, Malaysia.
Tel: 6013 302916; E-mail: nurliyana@johor.uitm.edu.my

Therefore, it is essential to understand the concept of Takaful firm's financial distress by highlighting the feasibility of using financial ratios, capital structure and Altman Z-score as a method to detect Takaful's distress. The detection of financial distress can assist Takaful operators to reduce the frequency of failures; thus, this averts the overall cost associate to insolvency or bankruptcy (Hernandez Tinoco, M., N. Wilson, 2013).

There two main considerations that are of utmost relevance in defining the conceptual framework of this study as following:

- This paper briefly explained the use of capital structure specifically on debt ratio as a proxy of financial distress.
- This paper used financial ratios such as profitability ratio, liquidity ratio and size of firms as independent variables as predictors of financial distress
- This paper highlight the Altman Z-score as a method to predict financial distress

The remainder of this paper is structured as follows: Section 2 discusses the literature review on conceptual background, Section 3 provides a methodology and conceptual framework and the conclusion are reported in Section 4.

Literature Review:

Financial distress is a condition where a company cannot meet nor has difficulty in paying off its current financial obligations due to the insufficient of working capital. The financial failure of insurance company cost money and it is worth to be concerned to prevent and minimizing the cost failures to the public. Normally, firms might face one of two possible conflicts when they enter financial distress that is a cash shortage on the assets side of the balance sheet or a debt overhang in liabilities (Radhakrishna, G., 2012)]. The other potential concern factor of this industry is on distress of their asset value. On the other hand, (Acharya, V.V., 2009) proposed a different factor on the company financial collapse which is on the financial regulation of insurance companies itself. The existence of assessments for financial distress towards the Takaful firms suggests that the early detection of financial distress is crucial for insurers to avoid bankruptcy and to minimize personal costs. Ratio analysis was widely used as an early warning system to identify the company's insolvency level that needs to be looked at in more detail. proofed a study that using capital adequacy and net working capital or total asset is significant in detecting the company financial distress. In addition, (Suntraruk, P., 2007) who has conducted an analysis insurance company performance, gives a suggestion to business people to be concerned toward six ratios (risk based capital, technical reserve to investment ratio, debt ratio, return on equity, loss ratio and expense ratio) to increase their company's performance. Using the same method of ratio analysis, [40] conducted a research on insurance firms in Turkey using four important ratios that highlighted by him such capital adequacy ratio, quality of assets and liquidity ratio, ratios of activity and ratios of profitability and resulted in some trend performance of the sector. A recent paper by (Burca, A.M. and G. Batrinca, 2014) also reported that the financial performance of Romanian insurance market relevant with financial leverage in insurance, company size, growth of gross written premiums, underwriting risk, risk retention ratio and solvency margin.

The capital structure is related to the ability of the firm's manager to make a decision to determine the best owners' equity and weight of liabilities to finance the project; hence it affects the value of the firm. Most of the literature in capital structure provides similar empirical patterns and can be explained by various different theories. The decision of the capital structure is vital for any firm because of the requirement to maximize owner's wealth and generate more profits. Previous empirical studies have shown that appropriate combinations of debt and equity are important for all firms in order to finance their operations (Abor, J., 2005; Abor, J., 2007) and to maximize their overall market value. There are two well-known theories on the determinant of capital structure that are static trade-off theory and pecking-order theory. The static trade-off theory represents a trade-off between tax benefit of debt and bankruptcy cost. According to this theory, any increment in the level of debt (bankruptcy and financial distress), will cause the value of the firm's decrease. Firms would have more debt-taking capacity and greater tax shield when the profits are high. The pecking order theory which was developed by (Outecheva, N., 2007) explained that firms have a preferred hierarchy for financing decision. Firms make the decision to their capital structure by prioritizing sources from internal financing to external financing and debt to equity, if they issue security and use external financing when the insufficiency of internal funds happens in their operations.

Debt ratio as a proxy of financial distress indicates the portion of leverage of the firms that has relation with their assets. Debt ratio has a significant positive correlation with risk and bank credit, and a significant negative correlation with short-term debt to equity, return on equity and return on assets (Bokpin, G.A., 2009; Bokpin, G.A., A.C. Arko, 2009). (Lin, S.L., 1996) in their study found a positive relationship between debt ratio and insolvency ratio. Debt ratios or cash flows ratios can indicate the solvency and liquidity where higher ratio values can translate into lower distress risk. By measuring long-term debt for degree of financial leverage, future solvency problems can simply be identified even though the ratios tend to take a long-run approach (Zeytinoglu, E. and Y.D. Akarim, 2013). In addition, (Soekarno, S. and D.A. Azhari, 2009; Brockett, P.L., 2006) in their

studies found that the solvency ratio must be significant because the ratios measure the company's financial risk by determining the amount of assets financed by debt.

Profitability ratio measures the firm's earning capacity and measures the ability of a firm to generate and improve profits. (Soekarno, S. and D.A. Azhari, 2009; Humaida, B.S., 2012) found that profitability ratio has positively related to firm distress. Furthermore, (Keasey, K., R. Watson, 1991) in their study stated that insolvency ratio of insurance firms is strongly related to Net Profit Margin (NPM) especially when making economic decision. Besides that, (Lin, L., J. Piesse, 1999; Moyer, S.G., 2005; Altman, E.I., 2000; Zeytinoglu, E. and Y.D. Akarim, 2013; Terzi, Serkan, 2012; Topal, Y., 2008) in their own studies also found a significant relationship between Net Profit Margin (NPM) and insolvency ratio due to different scope of studies such as different countries, different institutions and different methods. The pecking-order theory provides different results compared to the trade-off theory in terms of profitability. According to the theory, high profit firms outperform low profits firms in terms of using retained earnings in internal financing. Consistent with the theory, (Bokpin, G.A., 2009) found profitable firms will significantly curtail external financing and resort to internally generated funds such as retained earnings. Capital structure exerts a significantly negative effect on profitability and it implies that a company has higher profitability when the equity ratio increases or reserve-to-liability ratio decreases (Chen, J.S., 2009). Furthermore, (Amidu, M., 2007) also found a statistically significant negative relationship between profitability measured by returning on equity and financial leverage, debt ratio and external financing but a statistically insignificant negative relationship between choices of short-term debt over equity.

Liquidity can be a significant predictor of distress because it measures a company's ability to meet its short term obligations through the use of cash and other liquid assets (Idris, N.F., 2008). The ratio can be divided into several ratios, for instance, current ratio and quick ratio. Firm's liquidity is vital as it shows the ability to pay bills when they are due and to meet unpredicted needs for cash. Higher liquidity values should provide a better shield to distress and insolvency. A number of empirical studies have shown a positive relationship between liquidity ratio and financial distress. (Lin, S.L., 1996), for instance, found positive liquidity ratio and the ratio was significantly related to financial distress of insurance firms. However, there are also several studies showed negative results such as (Altman, E.I., 2000), who found liquidity ratios were not particularly significant. Other than that, (Brockett, P.L., 2006) also found liquidity is not significant to predict financial distress in insurance company. This is due to liquidity ratio which is not important since it is only concerned with the company's ability to meet near-term obligations.

The size of the firm has a positive relation with the debt ratio and it is proven by the previous studies. Rationally, a large firm has better access to credit markets in comparison to smaller firms. (Bhaduri, S.N., 2002), for example, stated that there was evidence that the size of a firm plays a pivotal role in the capital structure choice. Large firms tend to diversify the business so that the less become vulnerable to financial distress. Bhaduri's statement was supported by (Eriotis, N., 2007), which they found that large firms tend to use more debt. Moreover, research done by also found that the size of the firm is the most common significant indicator for non-life insurance companies' financial distress. Therefore, firms will borrow more short-term funds as their operational size increases than issuing equity. However, (Abor, J., 2008) found that for all measures of debt, the firm size is significantly negative relation with return on assets (ROA). The negative relationship implies that the firms avoid using more equity because of the fear of losing control in ownership structure; therefore, they prefer to employ more debt in their capital structure.

Methodology And Discussion On Conceptual Framework:

This study attempted to use Altman Z-score as the main method to predict Takaful firms' financial distress. In 1968, Edward Altman, a financial economist and professor at New York's Stern School of Business, develop an Altman's Z (the Z-score) through a multiple discrete analysis (MDA). Even the Altman's Z-score had been criticized by early scholars because of having a poor record as predictor, but (Myers, S.C. and N.S. Majluf, 1984) claims Altman's Z – score is one of the best known, statistically derived predictive models used to forecast a firm's impending bankruptcy.

(Anjum, S., 2012) also supports the Altman's Z-score model, he states that the model could predict distress and bankruptcy one, two and three years in advance even in the recent economy. While, (Hayes, S.K. 2010) suggests that the Z-score should reside in the manager's and investor's toolbox for diagnosing the possibility of future financial distress in firms. Furthermore, (Ijaz. M.S., 2013) found that a reliable tool of assessing financial health is a Z-score. The Z-score measure the financial status of a company by employing various information from corporate income statement and balance sheets. Altman selects the inputs from those financial reports that are one reporting period earlier than bankruptcies. Twenty-two common financial ratio was chosen by Altman which considered can eliminate the company's size effect. Then, those ratios were divided into five categories: liquidity, profitability, leverage, solvency, and activity. Lastly, based on popularity in literature and potentially relevant to the study, he reduced his selection by choosing one ratio for each category. Therefore, the Z-Score was originally constructed as:

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

Where;

X_1 = working capital per total assets

X_2 = retained earnings per total assets

X_3 = earnings before earnings and taxes per total assets

X_4 = market value of equity per book value of debt

X_5 = sales per total assets

The first ratio of Z-score model (X_1) describes the relation between working capital and total assets. This ratio explicitly considers the liquidity situation and the size of the company. Altman has founded this financial ratio as the most valuable variable to predict bankruptcies since they show the ability of a business to quickly generate the cash needed to pay outstanding debt. This ratio also is the most significant in both univariate and multivariate analysis as compared than quick and current ratio. Besides that, this ratio also contracts if the company is in loss because its nominator decreases due to shrinkage in current assets. This can be proven by a study from (Chuvakhin, N., L. Gertmenian, 2003) which states a company with negative working capital is relatively possible to experience difficulty in gathering its short-term obligations. In contrast, a positive working capital company infrequently has a situation of accrued bills. Furthermore, (Agyemang, B. and E. Agalega, 2014) found the corporate organization with large fraction has a large possibility of well perform, being a solvent and less risk of going into liquidation. According to (Al-Rawi, K., 2008), a decreasing of current assets due to operating losses is also a reason for Altman include this ratio in the model.

The second ratio of Z-score model is retained earnings per total asset (X_2). This ratio represents a measure of accumulated profits over the entire life of the business, the age of the business as well as its earning power. According to Altman, a young business is supposed to have a low quotient in comparison with an older business since they have lesser time to accumulate its earnings. Consequently, this ratio gives an estimate that a younger business has a high probability to face the risk of default while the older firms more rarely declared bankrupt. This is supported by (Dun & Bradstreet, 1994) which found that 50 percent of business fails within the first five years of its operation. Another rationale of using this ratio in the computation of Z score is that high retain earnings indicate a good business year and the ability of the company to face the period of losses besides increase longevity of the company. This ratio also able to show the leverage of a business by comparing retained earnings and total assets. The firms with high retained earnings relative to total assets shows that they have financed their assets through retention of revenues and have not utilized as much liabilities.

The third ratio, X_3 measure the real productivity of the firm's assets through dividing the earnings before interest and taxed to total assets. Independent from tax and the leverage effect will shows the lucrative of the business. This ratio shows the earning power of its assets which is an important factor for the survival of the company. Therefore, this ratio appears as a vital in predicting bankruptcy. (Altman, E.I., 2000) had proven it by showing the continually outperforms of this ratio as compared than other profitability measure including cash flow. Furthermore, insolvency in the sense of bankruptcy happen when the fair value of the firm's assets less than the total liabilities. As a result, the actual net worth of the company is negative.

The fourth ratio (X_4) measures the market value of equity or market capitalization via the summation of all market value of company equities, preferred and common stock, whereas a book value of total debt is the book value of total liabilities including both current and long term. Stock market as the primary estimator of a company's worth suggest that price fluctuation may foreshadow the pending problem if a company's liability is higher as compared than its assets. This ratio also helps to avoid insolvency by measuring the maximum level of the company's assets can decline in value (measured by market value of equity plus debt). As an example, a company with a market value of its equity of RM1,000 and debt of RM500 could experience a two-thirds drop in asset value before insolvency. Nevertheless, the same firm with RM250 equity will be insolvent if assets drop only one-third in value. Altman claims this ratio adds a market value dimension which most other failure studies did not consider, thus, he believes this ratio is a more effective financial distress predictor than net worth/total debt (book values).

The last ratio of Z-score model measure the ability of assets to create sales of the company through dividing sales to total assets. Altman claims this ratio as a measurement of management capability in dealing with competitive condition. Altman states that this last ratio is fairly significant, however he still found it to be useful to default prediction because of its unique relationship to other variables in the model. Furthermore, this ratio also comes at number second in its contribution to the overall discriminating ability of the model even it would not appear on the univariate statistical significance test, but this ratio comes at number two in its contribution to the overall discriminating ability of the model. The importance of this ratio is supported by (Chuvakhin, N., L. Gertmenian, 2003) which claim that this ratio is an indicator of a firm's efficient use of assets to generate sales.

Grounded along the previous literature, financial distress predictors can be summarized as in Table 1 with definitions and predicted signs for each variable.

Table 1: Summaries of financial distress predictors, definitions and predicted signs.

Variables	Definitions	Predicted Signs
Z		Predictor
X ₁	Debt Ratio	-
X ₂	Working capital / total assets	-
X ₃	Retained earnings / total assets	-
X ₄	Earnings before earnings and taxes / total assets	-
X ₅	Market value of equity / book value of debt	-
X ₅	Sales / total assets	-

Notes:

“+” means that debt ratio (financial distress) has a positive relationship with the predictor.

“-” means that debt ratio (financial distress) has a negative relationship with the predictor.

“+/-” means that debt ratio (financial distress) has both positive and negative relationships with the predictor

Way Forward And Conclusion:

This paper discusses basic concepts on the prediction of Takaful firm’s financial distress in Malaysia. The main objective of the study is to provide a basic understanding of the feasibility of using financial ratios, capital structure and Altman Z-score as an empirical approach to predict Takaful’s financial distress and how it can be used to predict Takaful’s distress. Thus, in order to test the suggested approaches, future research will be focused on empirical testing and results. Sources of data collection will be obtained from ten Takaful firm’s annual report such as Syarikat Takaful Malaysia Berhad, Etiqa Takaful and Takaful Ikhlas from 2005 until 2012. For further clarification, a focus group discussion will be conducted specifically for Takaful operators in Malaysia. The topic of discussion will focus on Takaful’s operations and sources of income. The results from discussion will be combined with empirical results for a better understanding. Future investigation also will provide a clear sight on financial distress as a signal of Takaful’s insolvency. The following framework (Fig.1) is developed in order to predict financial distress and act as an early warning signal of insolvency. Besides, further investigation will be more interesting if we strive to relate insolvency and sustainability of Takaful’s firms and come out with a benchmarking for distress signals.

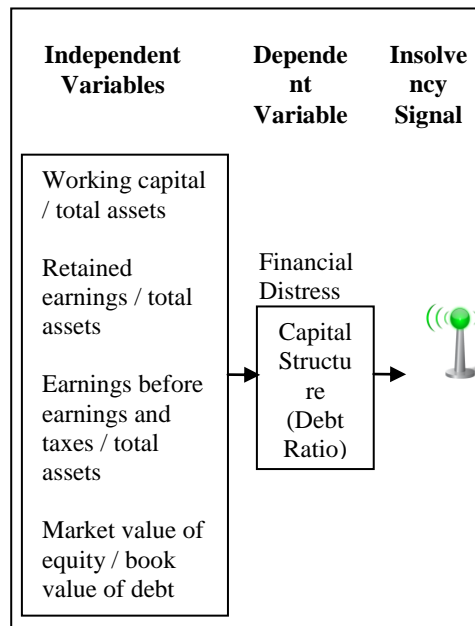


Fig. 1: Suggested Insolvency Framework.

REFERENCES

Abor, J., 2005. The Effect of Capital Structure on Profitability: Empirical Analysis of Listed Firms in Ghana, Journal of Risk Finance, 6(5): 438-445.

Abor, J., 2007. Corporate governance and financing decisions of Ghanaian listed firms. Corporate Governance, 7(1): 83-92.

Abor, J., 2008. Determinants of Capital Structure of Ghanaian Firms, African Economic Research Consortium Paper 176, Africa Economic Research Consortium, Nairobi

- Acharya, V.V., J. Biggs, M. Richardson and S. Ryan, 2009. On the Financial Regulation of Insurance Companies. NYU Stern School of Business.
- Agyemang, B. and E. Agalega, 2014. Altman's Z-Score Performance Assessment of Corporate Organisations in Ghana. *Africa Development And Resources Research Institute Journal*, 6(6): 14-29.
- Al-Rawi, K., R. Kiani and R.R. Vedd, 2008. The use of Altman Equation For Bankruptcy Prediction In An Industrial Firm (Case Study), *International Business & Economics Research Journal*, (7).
- Altman, E., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of finance*, 23(4): 598-608.
- Altman, E.I., 2000. Predicting financial distress of companies: Revisiting the Z-Score and ZETA models. Stern School of Business, New York University.
- Amidu, M., 2007. Determinants of capital structure of banks in Ghana: an empirical approach. *Baltic Journal of Management*, 2(1): 67-79.
- Anjum, S., 2012. Business bankruptcy prediction models: A significant study of the Altman's Z-score model. *Asian Journal Of Management Research*, 3(1): 212- 219
- Bhaduri, S.N., 2002. Determinants of capital structure choice: a study of the Indian corporate sector. *Applied Financial Economics*, 12(9): 655.
- Bokpin, G.A., 2009. Macroeconomic development and capital structure decisions of firms: Evidence from emerging market economies. *Studies in Economics and Finance*, 26(2): 129-142.
- Bokpin, G.A., A.C. Arko, 2009. Ownership structure, corporate governance and capital structure decisions of firms: Empirical evidence from Ghana. *Studies in Economics and Finance*, 26(4): 246-256.
- Brockett, P.L., L.L. Golden, J. Jang, C. Yang, 2006. A Comparison of Neural Network, Statistical Methods, and Variable Choice for Life Insurers' Financial Distress Prediction. *The Journal of Risk and Insurance*, 73(3): 397-419.
- Burca, A.M. and G. Batrinca, 2014. Determinants of Financial Performance in the Romanian Insurance Market. *International Journal of Academic Research in Accounting, Finance and Management Science*, 229-308.
- Chen, J.S., M.C. Chen, W.J. Liao, T.H. Chen, 2009. Influence of capital structure and operational risk on profitability of life insurance industry in Taiwan. *Journal of Modelling in Management*, 4(1): 7-18.
- Chuvakhin, N., L. Gertmenian, 2003. Predicting bankruptcy in the WorldCom age. *Graziadio Business Report*, 6(1), available at http://gbr.pepperdine.edu/031/print_bankruptcy.html, accessed during May 2014.
- Dun & Bradstreet, 1994. *The failure Record, 1994 and annually*.
- Eriotis, N., D. Vasiliou, Z. Ventoura-Neokosmidi, 2007. How firm characteristics affect capital structure: an empirical study. *Managerial Finance*, 33(5): 321-331.
- Gour, B. and M.C. Gupta, 2012. A Review on Solvency Margin in Indian Insurance Companies. *International Journal of Recent Research and Review*, (2).
- Hayes, S.K. K.A. Hodge and L.W. Hughes, 2010. A Study of the Efficacy of Altman's Z To Predict Bankruptcy of Specialty Retail Firms Doing Business in Contemporary Times, *Economics & Business Journal: Inquiries & Perspectives*, 3(1): 122-134.
- Hernandez Tinoco, M., N. Wilson, 2013. Financial distress and bankruptcy prediction among listed companies using accounting, market and macroeconomic variables. *International Review of Financial Analysis*.
- Humaida, B.S., 2012. The Determinants for Run-Off Non-Life Insurance Companies in United Kingdom. *Insurance and Takaful Journal*, 2: 25-32.
- Idris, N.F., 2008. Financial Ratios as the Predictor of Corporate Distress in Malaysia. University of Malaya.
- Ijaz. M.S., A.I. Hunjra, Z. Hameed, A. Maqbool and R. Azam, 2013. Assessing the Financial Failure Using Z-Score and Current Ratio: A Case of Sugar Sector Listed Companies of Karachi Stock Exchange. *World Applied Sciences Journal*, 23(6): 863-870.
- IFSB -Islamic Financial Service Board, 2010. Standard On Solvency Requirements For Takaful (Islamic Insurance) Undertakings. December 2010. ISBN: 978-967-5687-04-4
- Jones, S. D.A. Hensher 2004. Predicting firm financial distress: a mixed logit model. *The Accounting Review*, 79(4).
- Keasey, K., R. Watson, 1991. Financial Distress Prediction Models: a Review of Their Usefulness. *British Journal of Management*, 2(2): 89-102.
- Lin, L., J. Piesse, 1999. The Identification of Corporate Distress: a Conditional Probability Analysis Approach.
- Lin, S.L., 1996. Financial distress classification in the life insurance industry. *Journal of insurance regulation*, 14(3): 314-342.
- Moyer, S.G., 2005. *Distressed debt analysis: Strategies for speculative investors*. Fort Lauderdale, FL: Ross Publishing.
- Myers, S.C. and N.S. Majluf, 1984. No Title. Corporate financing and investment decisions when firms have information that investors do not have, 13(2): 187-221.

Outecheva, N., 2007. Corporate Financial Distress : an Empirical Analysis of Distress Risk. University of St.Gallen.

Radhakrishna, G., 2012. Rethinking Insolvency Laws in the Malaysian Context. The Journal of Southeast Asian Research, 1-15.

Smith, M., C. Graves, 2005. Corporate turnaround and financial distress. Managerial Auditing Journal, 20(3): 304-320.

Soekarno, S. and D.A. Azhari, 2009. Analysis of Financial Ratio to Distinguish Indonesia Joint Venture General Insurance Company Performance using Discriminant Analysis. The Asian Journal of Technology Management, 2(2): 100-111.

Suntraruk, P., 2007. Predicting Financial Distress : Evidence from Thailand.

Terzi, Serkan, Sen, Ilker Kiyemli, D. Ucoglu, 2012. Comparison of Financial Distress Prediction Models: Evidence from Turkey. European Journal of Social Sciences, 32(4): 607.

Topal, Y., C. Elitas and M. Erkan, 2008 Using Ratio to Assess the Insurance Firms Operating in Turkey. Afyon Kocatepe University, Turkey.

Yim, J., H. Mitchell, 2005. A comparison of corporate distress prediction models in Brazil : Nova Economia_Belo Horizonte, 15(1): 73-93.

Zeytinoglu, E. and Y.D. Akarim, 2013. Financial Failure Prediction using Financial Ratio: AN Empirical Application on Istanbul Stock Exchange. Journal of Applied Finance & Banking, 3 (3): 107-116. ISSN: 1792-6580 (print version), 1792-6599 (online)