"Does neglecting the instruments of financial failure play a role in the bankruptcy of companies?"

AUTHORS	Selma Douha (iD)
	Soufyane Bouali (iD)
	Khadri Nadjib

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
49	0	3

Selma Douha, Ph.D., Lecturer,
Faculty of Economics, Commerce and
Management Sciences, Department
of Commerce, University of Batna 1,
Algeria.

Soufyane Bouali, Ph.D., Lecturer,
Faculty of Economics, Commerce and
Management Sciences, Department
of Commerce, Ferhat Abbas Sétif
University 1, Algeria. (Corresponding
author)

Khadri Nadjib, Ph.D., Lecturer, Faculty
of Economics and Management of
Tunis, Department of Management,
University of Tunis El Manar, Tunisia.

Selma Douha (Algeria), Soufyane Bouali (Algeria), Khadri Nadjib (Tunisia)

DOES NEGLECTING THE INSTRUMENTS OF FINANCIAL FAILURE PLAY A ROLE IN THE BANKRUPTCY OF COMPANIES?

Abstract

Corporate financial analysis tools are an important factor in corporate efficiency. Low-quality accessories for corporate financial analysis tools really brutally violate the interests of shareholders and can lead to the collapse of the business. The paper examines the development of models for predicting financial crises and compares the capabilities of existing models that can help alert management to current activity regarding an economic decision to buy shares or make loans. In the example of the NCA RUIBA company, Kida and Sherrod models were considered for predicting the financial failure of a firm. Based on the results of the calculations, it can be noted that NCA RUIBA had a good financial position when calculating the indicators according to Kida's model, and according to the calculated data of the Sherrod model, the organization relies on external financing through high-risk loans, which is associated with the growth of non-current liabilities, especially long-term and medium-term ones. The results suggest that although corporate financial analysis tools alone are not sufficient to accurately predict financial distress, they can increase the predictive power of financial indicators and macroeconomic factors.

Keywords	financial failure, Kida & Sherrod model, predict, financial distress
JEL Classification	G01, G33, G17

INTRODUCTION

Manufacturing companies go through different stages of the business life cycle due to many factors, both internal and external (Scott & Bruce, 1987), that constrain their managers to assess their performance to adapt to the changes that are taking place (Hulme, 2005). Most manufacturing companies use their financial performance to determine how long they will survive and whether they will go bankrupt later (Dalton et al., 1999). This is the preoccupation of all corporate management to reach the ultimate goal of continuity (Morris & Wood, 1991). Since the beginning of the 21st century, corporate failure has completely changed (Elkington, 1998), leading to an increase in the number of companies experiencing financial difficulties and/or having to stop their activities altogether (Ittner & Larcker, 2003). The recent financial crisis has revealed weak financial systems around the world and has led to massive instability, almost the failure of some financial markets. Thus, the predictability of corporate failure remains an urgent need, especially to ensure the relationship between financial institutions and corporate failures that have also increased dramatically, emerging as a major discipline corporate finance research stream (Goedhuys et al., 2016). To achieve its goals effectively and efficiently, a company needs to measure and evaluate its results or, rather, its financial performance (Gunasekaran et al., 2004). Thus, most analysts use global statistical models to forecast financial failure or their long-term financial situation (Rodden, 2002).

The study problem centers on the seriousness of financial failure and its negative effects on the economies of the emerging countries, due to their neglect of the most important aspects of accounting, and as a result of the inability of many emerging companies to remain in the market, and the continuation of the attempt to not increase these companies in order not to harm the Algerian economy.

The importance of the current study is reflected in the importance of the issue of the sustainability of companies in their work or their exposure to financial failure. In the future for all interested parties related to the company, especially after the accusations leveled at the profession of external audit after many international companies faced financial failure and the responsibility of the external auditor and the management of companies about that failure (Otusanya & Lauwo, 2010), the study aims to shed light on the importance of using external auditors' financial failure forecasting and corporate management models in assessing the ability of those companies to continue as a going concern (Elsayed & Elshandidy, 2020), or financial failure in the future; Analysis tools aim to look for short-term and long-term fiscal balance conditions and detect fiscal policy weaknesses and is one of the most important means by which the results of the work are presented to the supervising department. The demonstration of their efficiency in functioning and proper planning (Fournier, 1998), as well as analysis of financial lists by demonstrating the reasons for success or failure are made by using Sherrod and Kida prediction models, which help make appropriate decisions and judge the financial status of an enterprise.

1. LITERATURE REVIEW

Predicting corporate bankruptcy has a long history, ever since (Altman, 1968) introduced multiple discriminant analysis to this subject area and various subsequent methods to prevent potential losses for banks and detect financial crisis caused by Financial risks (Li et al., 2021). Although financial ratios have played a major role in modelling, scholars such as Shumway (2001) and Bonfim (2009) have continued looking for new methods and information to improve model performance. In recent years, this is the market price (Ashraf et al., 2019), regarded as a forward-looking indicator and frequently used to calculate financial risk (Beretta & Bozzolan, 2008). The New Basel Accord also established and addressed macroeconomic level factors on performing bank loan portfolios (Malik & Thomas, 2010). Soft information related to corporate governance can also assess financial risk at the individual level (Altman, 1984).

In 1988, Merrick Hutchinson used Principal Components Analysis (PCA) to recognize the monetary attributes of little firms to accomplish citation on the UK unlisted securities market (Adalessossi, 2015). In 1992, Laitinen endeavored to foster a model to failure of newly founded firms (Weinzimmer et al., 1994). He portrayed failure of newly founded firms in accompanying way:

1) high indebtedness and small size;

2) too slow velocity of capital, too fast growth and poor profitability;

3) unexpected lack of revenue financing; and

4) poor static liquidity and debt service ability.

His examination showed that it was conceivable, somewhat, to expect disappointment of new organizations in the principal year after establishment (Gilboa et al., 2008). He tracked down that the best-inferred indicators were the accompanying: stockholders' capital/total capital, cash flow/net sales and cash flow/total debt (Adalessossi, 2015). The classifications include liquidity proportions, influence proportions, movement proportions, and benefit proportions (Courtis, 1978); reviewed a few investigations to recognize the factors helpful at anticipating disappointment gathered. The monetary proportions differ in three principal classes: profitability ratios, managerial performance ratios, and solvency ratios. The above study recommends that monetary proportion examination is a helpful technique for foreseeing business execution (Boigues, 2016). How the meaning of proportions has changed from one investigation to another has advanced the utilization of an assortment of techniques for risk of financial distress using in business disappointments

(Boubaker et al., 2020). The various strategies have considered both inferred and multivariate investigation methods (Altman et al., 2017). The classifications include liquidity proportions, influence proportions, movement proportions, and benefit proportions (Altman, 1968). Curtis reviewed a few investigations to recognize the factors helpful at anticipating risk of financial gathered. The monetary proportions differ in three principal classes: profitability ratios, managerial performance ratios, and solvency ratios (Courtis, 1978). The above study recommends that monetary proportion examination is a helpful technique for foreseeing business execution (Hylas & Ashton, 1982). How the meaning of proportions has changed from one investigation to another has advanced the utilization of an assortment of techniques for risk of financial distress using in business disappointments (Boubaker et al., 2020). The various strategies have considered both inferred and multivariate investigation methods (Wiegmann & Shappell, 2003). Another intriguing viewpoint that rises out of the utilization of proportion examination is the manner by which the proportions will be deciphered (Cielen et al., 2004). As shown by a study of Edmister, there are a few manners by which proportions can be dissected to foresee independent venture risk of financial, which include: the ratio level, the relative level of the borrower's ratio to the average ratio of other small business in the same industry (Adalessossi, 2015), before it can even consider overseeing financial risks necessary to understand what chance really is, so what does the word hazard probability and chance mean, as well as disappointment (Bouali et al., 2020) and misfortune. These standard terms can be described as the impact of vulnerability on targets, that is, a hazard is any deviation that may happen based on what was generally anticipated with regards to monetary danger (Dimitras et al., 1996). Changes in monetary related things sway the capacity of the association to accomplish its destinations. It is imperative to note from this definition that the deviation based on what is generally anticipated can either have positive or contrary results in business and in life where normally considered hazard is just zeroing in the antagonistic monetary effect and there are attempts to limit the harm that can be caused, which is usually considered a monetary hazard. Managers of a reputable insurance company in any case need to consider every monetary peril and know whether and how monetary consequences can arise, any options or actions taken to increase the cost will lead to a certain degree of risk. There are always factors and vulnerabilities in business challenges that need to be considered in financial risk, and the board, like an innate element of significant value creation efforts, understood from this that risk is not something terrible to start with. Fruitful organizations rarely have to miss chances to discern the chances, see what they can mean for the business, and then deal with those risks to the extent that they are in the best position to achieve business goals, and inquiry is the source of considerable danger. While some are aware of the link between risk and high risk returns, people expect exceptional returns as they need to recoup the risks they took and for the good they may realize they will simply demand low returns. So, the inquiry ends with what constitutes a hazard and how it can be assessed. Thus, it is now easier to understand the relationship between risk and return, which is risk in money, risk is unpredictability, if we take the case of an exchange of securities with costs for shares. There are several offers that fluctuate here and there, and sometimes reach the limits. The higher the contrast between ups and downs, the higher the instability, the higher the danger, but then it's not just about size. Similarly, the question of probability is that inquiry is the probability of reaching these limits, accordingly the danger in question is a matter of size, but in addition to the probability to present these thoughts of size and probabilities. There are two problems in risk assessment, the main problem is trying to recognize the correct factual law. Of course, for quite some time, experts have recognized that bid prices have followed the curve formed by the bell, that is, this Gaussian pattern is visible and based on numerous patterns in money dynamics on that chime molded bend. Yet ongoing proof shows that offer costs do not adhere to precisely that measurable law and that a more complex law is required to more fully describe the behavior of these offer cost. This implies that putting together described model with respect to this ringer molded bend could prompt wrong choices, particularly at the limits in light of the fact that the probabilities are not all around estimated. Now the next problem is that no factual flaw, even the most fitted to the model, can definitely foresee 100% of future events,

thus will constantly have multiple foci. Some of the costs of the proposal are out of bounds, and in the new years this was a problem of finance. One point that is generally not in accordance with the law may cast doubt on the whole model in view of the truth of the genuine principle, which is not a state stimulation law, however various observable facts are mentioned and the whole danger lies in unpredictability, and an attempt to quantify this instability by tracking the best functional law that corresponds to perception. But there is always a danger that some of the perceptions will not exactly match the model, therefore, there is an additional danger in this risk.

2. RESEARCH METHODOLOGY

Anticipating financial failure is useful to various parties. The results of this study may be useful to management, shareholders and investors (Yap et al., 2012). Additionally, applying these models can be an effective early warning tool for predicting a company's failure even before it occurs.

Special treatment is imposed by the Algerian Stock Exchange to give investors notice of potential risks. This therefore represents an official indicator of financial distress of listed companies. A listed company can be filed in the Special Treatment for any of these reasons (Li et al., 2021):

- negative net profit in the most recent two consecutive years;

- failure to disclose its annual report;

- likelihood of being dissolved; and

- reorganization, settlement or bankruptcy liquidation.

In over 80% of cases, the companies in the Special Treatment suffered net losses in two consecutive years. So, it is a popular indicator of financial distress (Geng et al., 2015 The choice fell on this sample because it went through the previous stages, and here is a brief about it: NCA Rouiba is a private company under Algerian law located on the National Road No. 5, Industrial Zone of Rouiba, Algiers 16300. Its share capital is 849,195,000 DA.

It was created in 1966 under the legal form of Society à Liability Limitée (SARL) under the name of "Nouvelles Conserveries Algériennes." It was transformed into a Joint Stock Company (SPA) in March 2003. The life of the company, initially limited to 50 years, was extended to 99 years by the Extraordinary General Meeting which met on 5 February 2006 (Salaouatchi et al., 2019). Since its incorporation in 1966, the company has only carried out the following activities:

- the production and distribution of drinks and fruit juices;

- the production and distribution of canned vegetables and fruits and UHT milk (discontinued in 2005).

3. DATA ANALYSIS METHOD

The publicly available financial statements of NCA Rouiba issued by the Algerian Stock Exchange from the ISE website, http://www.sgbv.dz/ar/, were utilized. On March 22, 2020, the company under consideration has stopped its activities in the Algerian Stock Exchange, and this is at the request of the board of directors of the company. This study was carried out during the period from 2017 to 2019, because the explicit financial statements that helped to conduct this study at the stock exchange did not include other years. This study (Mullainathan & Thaler, 2000) adopted two models to achieve its objectives.

3.1. Kida model

This model is based on the five most independent variables of financial ratios (Yap et al., 2012), using a differentiated analysis of the sighting into compatible items to distinguish between failing and failing economics. The study focuses on five ratios that form the aspects of operational performance (Babela & Mohammed, 2016):

$$Z = -1.042X1 - 0.427X2 - 0.461X3 - 0.463X4 + 0.271X5, \quad (1)$$

where $X1$ = net income / total assets. $X2$ = total shareholders' equity / total debt. $X3$ = quick assets / current liabilities. $X4$ = sales (revenue) / total as-

sets. $X5$ = cash / total assets.

According to the ratio of this model, the probability of a financial failure for a company increases the negative value of Z, as this model has a forecast capacity of 90 percent a year before the financial failure (Abidali & Harris, 1995).

3.2. Sherrod model

The Sherwood model is a modern model for forecasting financial failure, it relies on six independent financial indicators (Medjdoub & Abderrezzak, 2020), in addition to the relative weight of the differential function given to these variables. The model is therefore formulated as follows (Babela & Mohammed, 2016):

$$Z = 17X1 + 9X2 + 3.5X3 + 20X4 + \\ + 1.2X5 + 0.10X6,$$ (2)

where $X1$ = working capital / total assets. $X2$ = cash assets / total assets. $X3$ = total shareholders' equity / total assets. $X4$ = earnings before interest and taxes / total assets. $X5$ = total assets / total liabilities. $X6$ = total shareholders' equity / tangible fixed assets

Sherrod Z-Score determines how likely a company is to fail. In general, the lower the score, the higher the chance of bankruptcy. Based on the number of points (Z) (Babela & Mohammed, 2016), companies are classified into five categories by their viability (see Table 1).

Table 1. Categories by degree of risk and by measuring the ability to continue

Category	Risk degree	Z score
1st	Company is not exposed to the risk of bankruptcy	Z > 25
2nd	Little likelihood of exposure to the risk of bankruptcy	25 ≥ Z > 20
3rd	Difficult to predict the risk of bankruptcy	20 ≥ Z > 5
4th	Company is exposed significantly to the risk of bankruptcy	5 ≥ Z > −5
5th	Company is exposed to the risk of bankruptcy	Z ≤ −5

To its beginnings in the 1960's, many different techniques have been applied to predict undertaking failure (Chien et al., 2021). The business failure prediction has been arguably started earlier; but the foremost modern statistical model for business failure

prediction was published before that nonetheless (Dias & Teixeira, 2017). A few studies have uncovered that these models had the option to anticipate event of monetary disappointment in a huge percent by and large. This paper discusses the Multivariate Discriminant Approach (MDA) and mentions the use of Kida's Z-score model and Sherrod's Z-score model (Hamid et al., 2022). Just as the accompanying models are ones of the most present day models in predicting financial failure (Altman, 2013).

4. EMPIRICAL FINDINGS

In this regard, the Sherrod models and the Kid models will be applied, which were considered on the previous side in the course of the study, based on information from corporate documents.

4.1. Discriminant analysis (Z-scores of Sherrod)

The results present several key numbers on RCA's financial performance in Table 2, which were further extracted from RCA's annual reports for 2017–2019.

Table 2. Financial statements and Z-score results of Sherrod

Source: Authors.

Xi	Y			
	2017	2018	2019	SMA
$X1$	0.18	0.23	0.69	63.0
$X2$	0.014	0.024	0.2	70.0
$X3$	0.15	0.25	0.06	11.0
$X4$	0.09	0.03	0.4	52.0
$X5$	1	1	1	1
$X6$	0.25	0.38	0.08	81.0
Z score bankruptcy model = = 17$X1$ + 9$X2$ + 3.5$X3$ + 20$X4$ + 1.2$X5$ +0.10$X6$				
Z'Score of Sherrod	−2.984	181.2−	49.61−	74.6−

This model is used to assess credit risk when granting bank loans in addition to its role in predicting financial failure of institutions. Note that the average Z value is −6.47 during the school years. Based on this model, the NCA Ruiba is in the fifth tier and is highly vulnerable to failure. This means that the organization relies on external funding through high-risk loans, which is due to a rise in non-current liabilities, especially long- and medium-term ones, so it should take the necessary

measures to improve its position to avoid any future situation.

4.2. Discriminant analysis (Z-scores of Kida)

This indicates that the Kida model indicates serious underlying financial problems for NCA. In this way, this predictive model was used to know the actual economic conditions in the future and make the best decision (Alkhatib & Al Bzour, 2011).

Table 3. Financial statements and Z-score results of Kida

Source: Authors.

Xi	Y			
	2017	**2018**	**2019**	**SMA**
$X1$	0.09	0.03	0.4	52.0
$X2$	0.15	0.25	0.06	11.0
$X3$	0.02	0.04	0.22	90.0
$X4$	0.65	0.58	0.45	65.0
$X5$	0.014	0.024	0.2	70.0
Z score bankruptcy model = =1.042$X1$ + 0.42$X2$ + 0.461$X3$ + 0.463$X4$ +172.0 $X5$				
Z'Score of KIDA	0.283	0.367	70.0–	0.19

According to the results of the Kida model for predicting financial failure, it is clear that NCA Ruiba enjoys a good financial position, given that the average value of Z for the institution during the years of study was positive, as the value of Z in 2017 was estimated at 0.283, to rise in 2018 and become 0.367, after which it starts decreasing in 2019 and becomes –0.07. The results of the average evaluation are positive, and therefore the institution is not prone to failure according to the Kida model.

Through the foregoing, it is possible to confirm the validity of the hypothesis that financial ratios and forecasting models are able to assess the financial position of the institution, and that the institution uses a set of ratios to analyze its lists, but these ratios are not sufficient. Therefore, it is necessary to use a set of models to ensure and give a clear picture.

4.3. Financial ratio analysis

NCA Ruiba, a juice production company, left the stock exchange due to many financial problems the company has recently suffered. This step

is considered a new blow to the Algerian Stock Exchange, which remains in suspension due to the lack of real activity.

An electronic newspaper revealed that many financial problems it faces have imposed on it a new type of financing, through pleading for foreign partnership and working on giving up a large part of its shares to a French company specializing in beverages "CASTAL". The threat of bankruptcy prompted the company under study to give up more than half of its shares in favor of the BIH Brasseries Internationals Holding, the group that owns the French company CASTAL. On this basis, the board of directors of the company that was established in 1966 referred to the signing of an agreement with the French company in this regard, thus starting a new phase in the direction that the Algerian company has been following since its inception. In the past years, the company chose to head to the Algerian Stock Exchange and offer its shares to citizens who believe in the directions that company is pursuing in its economic activity.

According to the same sources, the French group will contribute, in a first stage, to 945 million dinars, within the framework of an emergency financing program. According to the agreement and the program established on December 30, 2019, in order to raise the capital of the "NCA" company by rupees, a situation that enables the French group to acquire control over the majority of shares, and control oversight and management of the board of directors accordingly, and accordingly, the legal framework and organization of the company under study will be changed by the appointment of two administrators representing the French assembly, in addition to the appointment of one of its former directors, who currently holds the position of director in the BIH complex as the company's general manager.

Shareholders who represent 44.04% of the shares are entitled to vote and take a position on the company's reorganization. The agreement will also be concluded by pouring a financial envelope from the French company into the NCA Ruiba account in order to raise its capital. The BIH seeks to purchase the contribution

of Africa Invest, which represents 14.81% of the capital of Ruiba, whose total capital is estimated at 849,195,000 dinars, which has been present in the stock market since 2003.

5. DISCUSSION

One of the biggest risks that companies can face is financial failure, which is the situation they are in. It includes a company's assets when they turn into insufficient liquidity to cover its obligations when they become due, so work must be done continuing to predict that a company will reach this situation and work to prevent it from continuing; they were found from the most important models of Sherrod and Kida, the global models used to predict the financial failure of companies of all kinds. They are very important thanks to their great role in revealing the possibility of companies heading towards bankruptcy (Hamid et al., 2022). And this is because each of them includes a set of financial ratios that are used to determine a company's ability to provide liquidity to pay its obligations, results achieved and profits (Olagunju et al., 2011), net working capital and the extent of a company's commitment to financial balance rules, in addition to other ratios (Appuhami, 2008), all of which relate to either debt, liquidity, profitability, or activity.

Despite the great usefulness of using and applying financial failure prediction models in most of the world's countries, when applied to the institution in question, it was possible to detect that an institution's stumbling block until the institution did not take such blankets into account. This result is significantly inconsistent with many studies carried out in this area for the purpose of designing models that can be applied through early detection of distress in institutions prior to occurrence and with high accuracy of those predictions. The main result of Sherrod's famous research was a model (Sherrod's model) (known and applied throughout the world, and for most models developed after the Altman model, on which many of these researchers relied on the scientific basis and mechanism by which Altman constructed his model) Shirata and many other researchers, on a different level. The results of this study are in conflict with many studies that have demonstrated the usefulness of the Altman model in business valuation and the extent to which it contributes to the rationalization of credit decisions. (Roy & Shaw, 2021). While many experiments and studies have concluded the feasibility of applying this model and its ability to predict the failure of enterprises (Altman, 2013), the results of other studies overlap with the results of this study (Spink et al., 2006). As in this study, some researchers have developed models for predicting bank failures and financial failures of enterprises that are consistent with the nature of the enterprises in which the case study was conducted and the sectors in which they belong (Altman et al., 2008), as well as the specifics of the economy of the state to which they belong. The application of these mechanisms to the institutions listed on the Algiers Stock Exchange and the Algerian economic environment is very difficult not to have the required scientific machinery and curricula (Khlif et al., 2020). Therefore, this study recognized the need to look for other models or to work on formulating a financial bankruptcy prediction model for companies listed on the Algiers Stock Exchange that is consistent with the nature and realities of companies listed on the Algiers Stock Exchange and the Algerian economic environment.

CONCLUSION

The issue of financial collapse has aroused the interest of many researchers due to its serious implications for the life of an institution, and shed light on it through the study of the topic "The Contributions of Financial Analysis Tools to Predicting Financial Failure". It was clear that financial analysis is a cornerstone in the evaluation process of institutions, as it determines the effectiveness of the institution in obtaining and managing funds appropriately, and also provides the most useful financial information to rationalize decisions based on a set of tools. Perhaps the most prominent of these were financial ratios and financial balance sheet indicators, which played the largest role in the process of evaluating institutions and predicting financial failure. Because of the importance of financial failure, it has been studied

and focused on models that allow early detection of its likelihood, since they give accurate results about the financial situation of an institution. As mentioned earlier, these models use a set of percentages with weights that differ from one model to another and provide a picture of the future state of the institution in the termination of the NCA Ruiba study from 2017 to 2019. Thus, we can definitively conclude that financial analysis is a structured study of financial lists based on a set of indicators for making decisions and diagnosing the state of an institution. The results of the analysis of indicators give the organization success or failure in achieving its goals. The liquidity ratio results confirmed the institution's inability to meet its obligations, the profitability results showed how vulnerable NCA Ruiba is to profitability. Financial analysis is aimed at identifying the strengths and weaknesses of the institution and assessing its financial and operational efficiency. The financial ratios were helpful in assessing the health of the organization as the results obtained from various financial ratios indicated that NCA Ruiba was in an uncertain situation. The activity ratios indicated the inability of the enterprise to make a profit from its fixed assets and dependence on working capital for profit. The debt ratios confirmed the NCA's reliance on debt to fund its operations, as its own funds are barely used. The financial balance ratios of working capital and working capital requirements and the Treasury found that NCA Ruiba was financially unbalanced. When applying the models of Kida and Sherrod, it was found that they have a very high probability of financial failure, which confirms the results obtained in the analysis of financial ratios and financial equilibrium indicators. Based on the results of the study and the use of the experience of the organization in question, it is recommended that Algerian institutions, especially those that have arisen later, use the following recommendations to avoid bankruptcy, since companies, regardless of their financial situation, need to pay more attention to the process of financial analysis of their listings using both traditional and new tools. Financial analysis plays an important role in detecting the possibility of failure at an early stage, and a company should assess its financial position by developing methods to get rid of the losses experienced in recent years. Here, for example, the diversification of products and the creation of new marketing plans in accordance with the events taking place in social and other networks.

AUTHOR CONTRIBUTIONS

Conceptualization: Selma Douha.
Data curation: Soufyane Bouali.
Formal analysis: Selma Douha.
Funding acquisition: Soufyane Bouali.
Investigation: Khadri Nadjib.
Methodology: Soufyane Bouali.
Project administration: Selma Douha, Khadri Nadjib.
Resources: Khadri Nadjib.
Supervision: Selma Douha.
Validation: Selma Douha.
Visualization: Soufyane Bouali.
Writing – original draft: Khadri Nadjib.
Writing – reviewing & editing: Soufyane Bouali.

REFERENCES

1. Abidali, A. F., & Harris, F. (1995). A methodology for predicting company failure in the construction industry. *Construction Management and Economics, 13*(3), 189-196. https://doi.org/10.1080/01446199500000023

2. Adalessossi, K. (2015). Prediction of Corporate Bankruptcy: Evidence from West African's SMEs. *Journal of Economics Finance and Accounting, 2*(3), 311-352. Retrieved from https://dergipark.org.tr/en/pub/jefa/issue/32436/360737

3. Alkhatib, K., & Al Bzour, A. E. (2011). Predicting corporate bankruptcy of Jordanian listed companies: Using Altman and Kida models. *International Journal of Business and Management, 6*(3), 208. https://doi.org/10.5539/ijbm.

v6n3p208

4. Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance, 23*(3), 589-609. https://doi.org/10.2307/2978933

5. Altman, E. I. (1984). A further empirical investigation of the bankruptcy cost question. *The Journal of Finance, 39*(4), 1067-1089. https://doi.org/10.1111/j.1540-6261.1984.tb03893.x

6. Altman, E. I. (2013). Chapter 17: Predicting financial distress of companies: revisiting the Z-Score and ZETA® models. In *Handbook of Research Methods and Applications in Empirical Finance*. Cheltenham: Edward Elgar Publishing. https://doi.org/10.4337/9780857936080.00027

7. Altman, E. I., Iwanicz-Drozdowska, M., Laitinen, E. K., & Suvas, A. (2017). Financial distress prediction in an international context: A review and empirical analysis of Altman's Z-score model. *Journal of International Financial Management & Accounting, 28*(2), 131-171. https://doi.org/10.1111/jifm.12053

8. Altman, E. I., Sabato, G., & Wilson, N. (2008). *The value of non-financial information in SME risk management*. SSRN. http://dx.doi.org/10.2139/ssrn.1320612

9. Appuhami, B. (2008). The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand. *International Management Review, 4*(1), 8-21. Retrieved from http://hdl.handle.net/1959.14/130798

10. Ashraf, S. G., Félix, E. G. S., & Serrasqueiro, Z. (2019). Do traditional financial distress prediction models predict the early warning signs of financial distress? *Journal of Risk and Financial Management, 12*(2), 55. https://doi.org/10.3390/jrfm12020055

11. Babela, I. S., & Mohammed, R. I. (2016). Business Failure Prediction using Sherrod and Kida Models: Evidence from Banks Listed on Iraqi Stock Exchange (2011–2014). *Humanities Journal of University of Zakho, 4*(2), 35-47. https://doi.org/10.26436/hjuoz.2016.4.2.239

12. Beretta, S., & Bozzolan, S. (2008). Quality versus quantity: the case of forward-looking disclosure. *Journal of Accounting, Auditing & Finance, 23*(3), 333-376. https://doi.org/10.1177/0148558X0802300304

13. Boigues, S. R. (2016). *An empirical factor analysis of efficiency and profitability ratios in the US retail industry* (Thesis). Morehead State University. Retrieved from https://scholarworks.moreheadstate.edu/msu_theses_dissertations/19/

14. Bouali, S., Douha, S., & Debbabi, M. (2020). Consumer Preferences and Future Impact on the Algerian Car Market. *Academy of Marketing Studies Journal, 24*(1), 1-9. Retrieved from https://www.scinapse.io/papers/3012679484

15. Boubaker, S., Cellier, A., Manita, R., & Saeed, A. (2020). Does corporate social responsibility reduce financial distress risk? *Economic Modelling, 91*, 835-851. https://doi.org/10.1016/j.econmod.2020.05.012

16. Chien, F. P., Pantamee, A. A., Hussain, M. S., Chupradit, S., Nawaz, M. A., & Mohsin, M. (2021). Nexus between financial innovation and bankruptcy: evidence from information, communication and technology (ICT) sector. *The Singapore Economic Review, 66*(3), 1-22. https://doi.org/10.1142/S0217590821500181

17. Cielen, L. P., Peeters, L., & Vanhoof, K. (2004). Vanhoof Bankrupt prediction using a data envelopment analysis European. *Journal of Operational Research, 154*(2), 526-532. https://doi.org/10.1016/S0377-2217(03)00186-3

18. Courtis, J. K. (1978). Modelling a financial ratios categoric framework. *Journal of Business Finance & Accounting, 5*(4), 371-386. https://doi.org/10.1111/j.1468-5957.1978.tb01059.x

19. Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal, 42*(6), 674-686. https://doi.org/10.5465/256988

20. Dias, A. T., & Teixeira, A. A. C. (2017). The anatomy of business failure: A qualitative account of its implications for future business success. *European Journal of Management and Business Economics, 26*(1), 2-20. https://doi.org/10.1108/EJMBE-07-2017-001

21. Dimitras, A. I., Zanakis, S. H., & Zopounidis, C. (1996). A survey of business failure with an emphasis on prediction methods and industrial applications European. *Journal of Operational Research, 90*(3), 487-513. https://doi.org/10.1016/0377-2217(95)00070-4.

22. Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management, 8*(1), 37-51. https://doi.org/10.1002/tqem.3310080106

23. Elsayed, M. T., & Elshandidy, T. (2020). Do narrative-related disclosures predict corporate failure? Evidence from UK non-financial publicly quoted firms. *International Review of Financial Analysis, 71,* 101555. https://doi.org/10.1016/j.irfa.2020.101555

24. Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research, 24*(4), 343-373. https://doi.org/10.1086/209515

25. Geng, R., Bose, I., & Chen, X. (2015). Prediction of financial distress: An empirical study of listed Chinese companies using data mining. *European Journal of Operational Research, 241*(1), 236-247. https://doi.org/10.1016/j.ejor.2014.08.016

26. Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: examining main and moderating effects. *Personnel Psychology, 61*(2), 227-271. https://doi.org/10.1111/j.1744-6570.2008.00113.x

27. Goedhuys, M., Mohnen, P., & Taha, T. (2016). Corruption, innovation and firm growth: firm-level evidence from Egypt and Tunisia. *Eurasian Business Review, 6*(3), 299-322. https://doi.org/10.1007/s40821-016-0062-4

28. Gunasekaran, A., Patel, C., & McGaughey, R. E. (2004). A framework for supply chain performance measurement. *International Journal of Production Economics, 87*(3), 333-347. https://doi.org/10.1016/j.ijpe.2003.08.003

29. Hamid, G., Haji, S. M. R., & Omar, K. M. T. (2022). Detecting financial failure using Sherrod Model: Evidence from Iraqi Stock Exchange Listed Banks (2009–2015). *International Journal of Academic Accounting, Finance & Management Research, 6*(4), 9-15.

30. Hulme, P. E. (2005). Adapting to climate change: is there scope for ecological management in the face of a global threat? *Journal of Applied Ecology, 42*(5), 784-794. https://doi.org/10.1111/j.1365-2664.2005.01082.x

31. Hylas, R. E., & Ashton, R. H. (1982). Audit detection of financial statement errors. *Accounting Review, 57*(4), 751-765. Retrieved from http://www.jstor.org/stable/247410

32. Ittner, C. D., & Larcker, D. F. (2003). Coming up short on non-financial performance measurement. *Harvard Business Review, 81*(11), 88-95. Retrieved from https://hbr.org/2003/11/coming-up-short-on-nonfinancial-performance-measurement

33. Khlif, H. A., Ahmed, K., & Alam, M. (2020). Accounting regulations and IFRS adoption in francophone North African countries: the experience of Algeria, Morocco, and Tunisia. *The International Journal of Accounting, 55*(1), 2050004. https://doi.org/10.1142/S1094406020500043

34. Li, Z., Crook, J., Andreeva, G., & Tang, Y. (2021). Predicting the risk of financial distress using corporate governance measures. *Pacific-Basin Finance Journal, 68,* 101334. https://doi.org/10.1016/j.pacfin.2020.101334

35. Malik, M., & Thomas, L. C. (2010). Modelling credit risk of portfolio of consumer loans. *Journal of the Operational Research Society, 61*(3), 411-420. https://doi.org/10.1057/jors.2009.123

36. Medjdoub, A., & Abderrezzak, H. (2020). A comparative study between Altman, Kida and Sherrod's model in predicting the financial failure of listed companies in Amman Stock Exchange. *Economic and Managerial Research, 14*(4), 87-106. Retrieved from https://www.asjp.cerist.dz/en/article/122123

37. Morris, T., & Wood, S. (1991). Testing the survey method: continuity and change in British industrial relations. *Work, Employment and Society, 5*(2), 259-282. https://doi.org/10.1177/0950017091005002007

38. Mullainathan, S., & Thaler, R. H. (2000). *Behavioral economics* (Working Paper No. 7948). NBER. https://doi.org/10.3386/w7948

39. Olagunju, A., Adeyanju, O. D., & Olabode, J. S. (2011). Liquidity management and commercial banks' profitability in Nigeria. *Research Journal of Finance and Accounting, 2*(7-8), 24-39. Retrieved from https://iiste.org/Journals/index.php/RJFA/article/view/1283/1204

40. Otusanya, J. O., & Lauwo, S. (2010). The role of auditors in Nigerian banking crisis. *Accountancy, Business and the Public Interest, 9,* 159-204. Retrieved from https://kar.kent.ac.uk/25992/1/Otusanya2010.pdf

41. Rodden, J. (2002). The dilemma of fiscal federalism: Grants and fiscal performance around the world. *American Journal of Political Science, 46*(3), 670-687. https://doi.org/10.2307/3088407

42. Roy, P. K., & Shaw, K. (2021). A multicriteria credit scoring model for SMEs using hybrid BWM and TOPSIS. *Financial Innovation, 7*(1), 1-27. https://doi.org/10.1186/s40854-021-00295-5

43. Salaouatchi, H. S., Ait Yahia, K., & Adja, H. (2019). Les Specificites De La Gouvernance des Entreprises Familiales Cas: Nca Rouiba. *Journal of North African Economies, 20,* 1-12. https://doi.org/10.33858/0470-000-020-025

44. Scott, M., & Bruce, R. (1987). Five stages of growth in small business. *Long Range Planning, 20*(3), 45-52. https://doi.org/10.1016/0024-6301(87)90071-9

45. Spink, A., Jansen, B. J., Blakely, C., & Koshman, S. (2006). A study of results overlap and uniqueness among major web search engines. *Information Processing & Management, 42*(5), 1379-1391. https://doi.org/10.1016/j.ipm.2005.11.001

46. Weinzimmer, L. G., Robinson, R. K., & Fink, R. L. (1994). Small business entry strategies: An integration of technological discontinuity and industry growth potential. *Journal of Small Business Strategy, 5*(1), 1-10. Retrieved from https://libjournals.mtsu.edu/index.php/jsbs/article/view/285

47. Wiegmann, D. A., & Shappell, S. A. (2003). *A Human Error Approach to Aviation Accident Analysis. The Human Factors Analysis and Classification System* (1st ed.). Routledge. https://doi.org/10.4324/9781315263878

48. Wilson, R. (1997). Islamic finance and ethical investment. *International Journal of Social Economics, 24*(11), 1325-1342. https://doi.org/10.1108/03068299710193624

49. Yap, B. C., Munuswamy, S., & Mohamed, Z. (2012). Evaluating company failure in Malaysia using financial ratios and logistic regression. *Asian Journal of Finance & Accounting, 4*(1), 330-344. http://dx.doi.org/10.5296/ajfa.v4i1.1752