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ARE THE NG-THOMAS MODEL'S RESULTS CONSISTENT WITH THE ALABIDILI MODEL'S RESULTS IN EVALUATING THE FINANCIAL SOLVENCY OF CONSTRUCTION COMPANIES?

Jasim Doach Daier[A], Abdulkhaliq Albadran [B], Walid Maya Rodin[C]

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ABSTRACT

Purpose: This study sought to compare the following prediction models (Ng-Thomas & AL-Abidili) and the extent of the reliability of the results of each model in predicting the solvency of the Iraqi Contracting companies Registered in the Iraq Stock Exchange. It also sought to test the degree of congruence of the results of the two models.

Theoretical framework: Contracting companies are of great importance to the country in general and to the economy in particular. That is why researchers have been developing a large and wide range of financial models as well as the necessary criteria for the purpose of predicting the financial situation of these companies through the extent of their ability to complete projects or to find the necessary solutions to financial problems before it gets worse.

Design/methodology/approach: The financial statements were used to obtain the necessary data to calculate the ratios used in the two models. The analysis was conducted for a time series consisting of seven years, extending from 2011 - 2018. The Excel program was also used to calculate the variables of the two models, as well as the use of the (SPSS) package to test the hypotheses

Findings: The results showed the two models' ability to predict Iraqi contracting companies' solvency. On the other hand, there was agreement in the results of the two models, with that model (AL-ABIDILI) The most accurate prediction was.

Research, Practical & Social implications: The use of financial models, especially the financial models that have been prepared for contracting companies, gives a more accurate picture of the financial position of the companies and enables them to get rid of the evaluation problems that may occur if financial ratios are used and based on their interpretations.

Originality/value: models whose variables are highly dependent on the indicators of returns and profitability it models that greatly outperform the other models

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[A] *Assistant Lecturer, Accounting Department, College of Administration and Economics, University of Basra, Iraq. E-mail: jasimdoich@gmail.com Orcid: https://orcid.org/0000-0003-3288-1247*
[B] *Assistant Prof, Accounting Department, College of Administration and Economics, University of Basra, Iraq. E-mail: abdulkhaliq.albadran@uobasrah.edu.iq Orcid: https://orcid.org/0000-0002-9982-5111*
[C] *Assistant Prof, Accounting Department, College of Administration and Economics, University of Basra, Iraq, 3Statistics Department, College of Administration and Economics, University of Basra, Iraq. E-mail: Wmro78@gmail.com Orcid: https://orcid.org/0000-0002-0830-4426*

OS RESULTADOS DO MODELO NG-THOMAS SÃO CONSISTENTES COM OS RESULTADOS DO MODELO ALABIDILI NA AVALIAÇÃO DA SOLVÊNCIA FINANCEIRA DAS EMPRESAS DE CONSTRUÇÃO?

RESUMO

Objetivo: Este estudo procurou comparar os seguintes modelos de previsão (Ng-Thomas & AL-Abidili) e a extensão da confiabilidade dos resultados de cada modelo na previsão da solvência das empresas contratantes iraquianas registradas na Bolsa de Valores do Iraque. Também buscou testar o grau de congruência dos resultados dos dois modelos.

Estrutura teórica: As empresas contratantes são de grande importância para o país em geral e para a economia em particular. É por isso que os pesquisadores têm desenvolvido uma grande e ampla gama de modelos financeiros, bem como os critérios necessários para o propósito de prever a situação financeira dessas empresas através da extensão de sua capacidade de completar projetos ou de encontrar as soluções necessárias para os problemas financeiros antes que estes se agravem.

Desenho/método/abordagem: As demonstrações financeiras foram utilizadas para obter os dados necessários para calcular os rácios utilizados nos dois modelos. A análise foi realizada durante uma série temporal composta de sete anos, que se estendeu de 2011 a 2018. O programa Excel também foi utilizado para calcular as variáveis dos dois modelos, assim como o uso do pacote (SPSS) para testar as hipóteses

Conclusões: Os resultados mostraram a capacidade dos dois modelos para prever a solvência das empresas contratantes iraquianas. Por outro lado, houve concordância nos resultados dos dois modelos, com esse modelo (AL-ABIDILI) A previsão mais precisa foi.

Pesquisa, implicações práticas e sociais: O uso de modelos financeiros, especialmente os modelos financeiros que foram preparados para as empresas contratantes, dá uma imagem mais precisa da situação financeira das empresas e permite que elas se livrem dos problemas de avaliação que podem ocorrer se forem usados rácios financeiros e com base em suas interpretações.

Originalidade/valor: modelos cujas variáveis são altamente dependentes dos indicadores de retorno e lucratividade modelos que superam em muito os outros modelos.

Palavras-chave: Solvência, Rácios financeiros, Modelos de previsão, A empresa contratante Iraquiana.

¿SON COHERENTES LOS RESULTADOS DEL MODELO NG-THOMAS CON LOS DEL MODELO ALABIDILI A LA HORA DE EVALUAR LA SOLVENCIA FINANCIERA DE LAS EMPRESAS CONSTRUCTORAS?

RESUMEN

Objetivo: Este estudio pretendía comparar los siguientes modelos de predicción (Ng-Thomas & AL-Abidili) y el grado de fiabilidad de los resultados de cada modelo en la predicción de la solvencia de las empresas contratistas iraquíes registradas en la Bolsa de Irak. También se pretendía comprobar el grado de congruencia de los resultados de ambos modelos.

Marco teórico: Las empresas contratistas son de gran importancia para el país en general y para la economía en particular. Por ello, los investigadores han venido desarrollando una amplia y variada gama de modelos financieros, así como los criterios necesarios con el fin de predecir la situación financiera de estas empresas a través del grado de su capacidad para completar proyectos o para encontrar las soluciones necesarias a los problemas financieros antes de que se agraven.

Diseño/metodología/enfoque: Se utilizaron los estados financieros para obtener los datos necesarios para calcular los ratios utilizados en los dos modelos. El análisis se realizó para una serie temporal compuesta por siete años, que abarca desde 2011 hasta 2018. También se utilizó el programa Excel para calcular las variables de los dos modelos, así como el uso del paquete (SPSS) para contrastar las hipótesis

Resultados: Los resultados mostraron la capacidad de los dos modelos para predecir la solvencia de las empresas contratistas iraquíes. Por otra parte, hubo concordancia en los resultados de los dos modelos, siendo el modelo (AL-ABIDILI) la predicción más precisa.

Investigación, implicaciones prácticas y sociales: La utilización de modelos financieros, especialmente los modelos financieros que se han elaborado para las empresas contratistas, ofrece una imagen más precisa de la situación financiera de las empresas y permite librarse de los problemas de evaluación que pueden surgir si se utilizan ratios financieros y se basan en sus interpretaciones.

Originalidad/valor: los modelos cuyas variables dependen en gran medida de los indicadores de rendimiento y rentabilidad son modelos que superan ampliamente a los demás modelos.

Palabras clave: Solvencia, Ratios financieros, Modelos de previsión, La empresa contratista Iraquí.

INTRODUCTION

Rapid technical advancement and environmental changes are quickening the economy, and increased company competitiveness has cut profit and increased the likelihood of bankruptcy. Financial decisions are becoming more strategic as a result. Any business's financial decisions require the use of a real scientific indicator. The right appraisal of the company's financial solvency is one of the appropriate indications for this goal. Financial ratios are one technique for understanding financial concerns, and by combining various ratios, researchers have produced multivariate prediction models (prediction models). Financial ratios are one of the most important indicators of a company's financial performance. ((Fahami, Norasyikin Abdullah, 2019).

It is one of the approaches and instruments required to anticipate the future position of organizations by combining a collection of financial ratios. This is significant; Because it is a clear indicator of inefficient resource allocation, it is detrimental from both the investor's and society's perspectives. Early warning allows management and investors to take precautionary steps and discern between favorable and unfavorable investment prospects (Imanzadeh et al., 2011) .

Financial ratios are the foundation upon which financial analysis is built, to formulate these ratios in a sophisticated scientific method that yields the greatest advantage in terms of time and effort. Sophisticated and contemporary studies in which these classic financial ratios have been updated, and a group of them have been picked in the form of detailed ratios used in financial analysis, particularly for forecasting solvency (Matar, 2006). The primary goal of financial analysis is to offer information and statistics on the financial status of certain parties. Financial ratios are one of the most widely used financial analysis tools, as they frequently indicate the mathematical relationship between two values or two or more financial statement items. The financial situation of the project and its success over a specific period can be evaluated by analyzing the financial ratios of these lists. (Al-Safrani et al, 2020).

Since Beaver (1966) first showed the predictive value of financial measures, the relationship between financial information and organizational failure has been significant. Because financial ratios give objective measurements based on the availability of information, they are frequently utilized as explanatory variables in numerous researches. (Veganzones & Severin, 2021).

Financial ratios are an important indicator of the financial position of companies. Pedigree companies are Financially unstable be volatile when she was descent Finance sound

for companies stable to me. Limit what. So, play analysis the ratio Finance turn Whatever in Determine M Solvency of the company, (Rama & Swartz, 2012).

The efficiency of financial activity is also one of the most important determinants of companies' ability to achieve their goals of survival and continuity, as the facility's mismanagement of the financial aspect may expose it to what is known as a financial failure. This applies to all types of companies regardless of their legal form or the nature of their activity. This is in addition to the negative effects on the economy as a whole (Alia et al., 2019) seem interest subject Forecasting solvency since the thirties From horn twenty distance exposure Number From Facilities American to me cases bankruptcy, so appeared many From Studies that I tried Building Forms Can use in Forecasting solvency before its occurrence, so Can for companies and institutions use That model From Yes take decisions The strategy that included to her continuity and stability and avoid it fall in bankruptcy. Where appeared first models in Contract VI From horn twenty and then followed by Appearance of many From models that I depend built on me output Analysis financial, so included That models pedigree different cross About profitability and liquidity and activity and others And that with a goal evaluation the performance financial for companies and try Forecasting solvency and show its reasons And that with a goal take Measures and decisions that suits All Position And that in the time the appropriate; as re Customize me to reply for uses more efficiency, and more From Precision in Forecasting in the situation futuristic for companies in Saucepan an on me Continuation and avoid its occurrence in bankruptcy.

Using Forms Forecasting Solvency trying companies Verification From Bezel her success or its failure in Investigation Objectives ruler, That is why she is Seeking to get on me Indications and tools help Managed a and destinations self-relevance a From users menus Finance From prediction (disclosure early) possibly stumble it and bankruptcy financial Before its occurrence (Baroudi, 2020).

In general, I Can note All from Indications Finance and administrative Negativity during Move company Toward bankruptcy. And with that, then methods traditional to observe the performance financial Such as analysis The ratio require an explanation Accurate in attempt to assemble the information available, It was completed Approval approach Degree Z Where Complete development a file solvency Finance for the company From the accounts Finance published and compare it Later with files companies known that enjoy with a sheet Finance good or Not prefilled (Abidali & Harris, 1995).

So, there need to be several Forms to ensure that taking Measures in the time appropriate to relieve from antiquities this the situation negative. Which establish relationship between data

income and items budget general and managed From Forecasting sustainable Finance futuristic and bankruptcy while Regard performance financial for companies (Turk & Assist Erdem KURKLU, 2017).

In addition, one of the elements contributing to business failure is a lack of funds to finance building projects, i.e. a contractor's lack of financial stability. Contractors, unlike most manufacturers, do not often own fixed assets, and they typically own construction equipment rather than buildings and land. Banks do not accept assets as a sufficient loan guarantee in this circumstance(Tijani, 2015).

As a result, the failure of the lowest bidder to complete projects is usually due to financial difficulties (HATUSHZEDAN & MARTIN SKITMORE, 1998) (Fong & Choi, 2000) which led the economic developments that took place, as well as the various environmental factors, whether economic or non-economic surrounding, led to the insufficiency of the results shown by the final financial statements at the end of the fiscal year. To provide a clear and complete picture of the company that serves the decision maker, whether inside or outside the project. These decisions are based on financial analysis based on Information from the financial statements.

Therefore, researchers have been developing models that contribute significantly to predicting the solvency of companies in order to take the necessary measures for the company's sustainability.

Based on the preceding, the problem of the study can be formulated in the following question:

Are the results of the quantitative models consistent? Model (Ng-Thomas) and model (ALABIDILI) determine the level of solvency. Moreover, what is the model whose results can be relied upon in determining a company's financial solvency level? The research derives its importance from the financial analysis of companies and the assessment of their financial solvency using modern indicators for evaluation, the most important of which are financial models. Furthermore, through the role models play, Knowing the company's financial position in the future, in turn, helps in taking measures that help maintain the company's continuity. In addition to the importance of companies executing government contracts for the overall economy of the country.

Previous studies

She was Results Main To study **(Ohlson, 1980)** summed up in Determine four Factors basic as a self-indication Statistic in the influence on me possibility The deterioration of the

company's financial position (during general one). They are (1) size companies; (2) structured financially. (3) the performance; (4) the Liquidity current and concluded. Ban Depends Power predictive for any Model Depends on me time Availability Information (menus finance). Some Studies Previous did not warn him in this connection as, It seems that powers predictive for transformations sin for vector descent strong Across Procedures Appreciation**.**

He has created a technique for identifying construction firms experiencing financial difficulties (Abidali & Harris, 1995). The system's primary components combine financial ratio analysis with a statistical technique known as the Z-score to generate a seven-variable predictive model that evaluates various dimensions of a company's financial structure using a single figure (multivariate discriminant analysis). As management performance variables are weighted, aggregated, and the degree of differentiation is assessed, a different method known as score value A has been devised to supplement the financial approach. Adopts the notion of A-level. Based on the assumption that a lack of managerial capability is often the primary cause of a company's financial difficulties.

Five unique components of the company's financial structure were studied using the linear discriminant analysis method to construct a linear discriminant model with seven variables: profitability, liquidity, activity, financial leverage, and the three trend measurements. Grade Z is accessible. The model shows that a specific company has a significant probability of collapse since its profile is highly similar to that of a failing company, giving decision-makers a financial indication of the firm's solvency**(Abidali & Harris, 1995)**.

A model was built to evaluate the performance of building contractors in China using financial ratios and Altman Z-Score modelling methods. It combines seven financial parameters encompassing firm financing, immutability, solvency, and cash flows to simulate consistent predictability over three years. A single performance indicator is developed to determine if a company is in good financial standing or exhibits the characteristics of a company in poor financial standing. He believes that this form is critical for lending institutions, commercial lenders, investors, and customers to analyze exposure companies that are likely to fail in the early stages. **(Thomas Ng et al., 2011)**.

The study also aimed (Imanzadeh et al., 2011) to me Application Forms Spring And the Zmijewski to predict the company's financial position, where test data was completed during the 2004-2008 period. I found a big difference between the two models in Forecasting bankruptcy. Bonus on me that, then Model Spring more reservation in Forecasting solvency From Model Zmijewski.

Where he is in Model Spring, considered as companies that she has Z-scores less from 0.862 in Model Zmijewski, companies that she has grades Z less from zero It is in bad financial condition. Therefore, Working Degree Z owns b Spring in the form of more strictness Done emphasizes this problem: From During a test t paired subordinate (Imanzadeh et al., 2011).

(Coelho et al., 2013) By studying this, Corporate solvency analysis was included in After the financial crises of 2008-2009. the basis of this study is the study made by Correia (2009), where the Larger contributor drop in solvency Finance. During the period, It was a drop in profits Before the benefits and taxes on my Rate assets total. And with that, Lost It was completed discount that to me Limit What From During contributions positivity that I gave it pedigree structure head Money, which represents the value market for shares on me Total Religion and value carrying rights Property on me Total pedigree Religion for pointer Altman Z- Score And the Altman Z 'EM on me straight (Coelho et al., 2013).

Solvency in the construction industry in Lithuania, where the study was conducted for 433 construction businesses from 2009 to 2013, was examined in a study of forecasting models conducted by *(Kanapickiene & Marcinkevičius , 2015)*. Logistic regression modified to models Chesser and Zavgren and Spring Linear discriminant were found to provide the highest accuracy for most prediction models. The model implies that Taffler and Altman's Z Models Emerging countries are the least accurate, according to the results. Additionally, the results of the Zavgren and Chesser log regression models were inconsistent and occasionally misrepresented the genuine financial standing of the companies; the accuracy of these models was lower than that of the linear discriminant analytics models. *(Kanapickiene & Marcinkevičius , 2015).*

He rose (Leow & Mao, 2017) we want Model precise Classified comp Building in The kingdom United successfully in put it financially and analyze this search variable financial extractor From Base data To develop Model Forecasting solvency of companies, longer Sample Developer As Marker warning Should work on me Administration Attention to her . with Entry companies to the "Zone" Gray" (Leow & Mao, 2017).

(Harjans & Beusichem, 2018) also discussed the Collection of miscellaneous From Forms Forecasting in financial condition and its differences. It was a completed comparison and analysis of Degree Z-Score From Altman And the J-model using a sample from American companies. According to this Comparison, it has been reached that Sample J is a better prediction of bankruptcy. It was completed construction Model new by adding a variable seventh, Rate Religion, to me Model J-UK the original, done Create a new model, called L-model And who It was He approves on me Degree Altman's z-Score.

The main causes of corporate failure, the company's age, inadequate management, and competition, all have an impact. Financial ratios are only the earliest signs and indicators of operational and financial problems, frequently the underlying causes of insolvency, developed a model for Altman's z-Score, a more accurate predictor of insolvency in the United Kingdom. US firms were the only difference in this study's model testing. The analysis contrasted Altman's z-score and the J-US model and concluded. The J-US model is superior to Altman's z-score for forecasting bankruptcy. However, the J-UK model appeared to be enjoying herself. It is more accurate than the J-US model identifying companies one year before bankruptcy (Harjans & Beusichem, 2018).

In the same context, a study focused on (Karas & Srbová, 2019) a test Collection From five Forms bankruptcy traditional on me a sample from comp Building Czech small and medium the size. To reach to me editing model new It includes Collection From Variables the mission that It was completed find on her to fit Business Building in Republic Czech and compare accuracy with Accuracy models that It was completed tested, where these variables include return On the assets on Basis EAT (net income / total assets), followed by return on me assets on me Basis EBIT (EBIT / Gross assets), and profitability (profits Retained / Total the findings) and the turnover of liabilities on Basis Sales (Liabilities current / sales).

Where find out that Sample that It was completed Created enjoy accurately higher From models that It was completed Analyze it, Where did not Complete construction models that It was completed Analyze it exclusively on me data own companies construction. We can say it is a Can get on me a plus Precision from During construction Model Special by branch specific.

The purpose of the sample is to find a Discrimination Mechanism, based on data Finance, between companies that enjoy a sheet good From side Finance and companies that face financial difficulties. Where the industry Building, she heavy head Money require periods long term for the project and investments huge, and take time long to receive revenues on my investment. So then she has structure head money Different comparison industries other Nor Can Application same Standards used in Industries other to evaluate its dangers Finance in the form of Active (Karas & Srbová, 2019).

I checked the study Conducted by (Musah & Agyirakwah, 2019) portability Application Model Altman Z- score in Forecasting by companies problematic Finance in Market Ghana for papers Finance. It was completed. Selection of a sample out of 10 companies included and a company Other to be used for purposes Verification From health. Included process Verification data for the years 2016 and 2017 for the company that represented a company You do not have

financial solvency And the A company that owns solvency. And therefore, dependent Analysis Final on me, a sample random out of 10 companies were included.

I showed consequences Forecasting initial than 50 per cent from companies. It was completed expect it in the form of Right while It was completed classification companies other in the form of wrong. I showed Analytics Additional that the size company impacted my possibility of bankruptcy while the nature of the work had no effect. He appears to Conclusion that It was completed reach mechanism that Degree Altman Z no she can Forecasting accurately by companies distressed financially in Ghana, but no still from possible that be useful in giving Signals (Musah & Agyirakwah, 2019).

(Baroudi, 2020) Comparing the results of three models For Forecasting (Altman, Sherrod, and Kida) and the extent to which the results of each model can be relied upon in predicting the solvency of the Iraqi Contracting Company, for this purpose, the descriptive approach was relied on in presenting concepts and Information related to predicting failure, with reliance on the analytical method in analyzing this Information, analysis and concluding it through a case study of the most important Saudi companies, which is the Iraqi Contracting Company that operates within the construction sector During the period from 2013 to 2019. Among the most important results obtained is that the Iraqi Contracting Company faces the risk of financial failure through the convergent results of the three models (Baroudi, 2020).

We researched a study(Al-Safrani et al , 2020) about the possibility of using the Kida model in predicting the solvency of Alinma Financial Investments Holding Company one, two and three years before its occurrence, the period 2014-2017. The study also tested whether the model's value increases as the period in which the solvency is predicted approaches. After analyzing the data and using the deductive method, the study reached a few results, the most important of which are: The possibility of using the Kida model in the forecasting process and the value of the model decreases as the period in which the financial solvency is to be predicted approaches.

The study (Veganzones & Severin, 2021) focused on a review of literature that suggest Forms Forecasting fail companies for the century atheistic Twenty where collected Information out of 106 articles published Contains on me Forms anticipation of failing companies. Take his analysis of Elements necessary to design Forms Forecasting.

He also concluded it is a from the impossible a guarantee Excellence Which model or method one because all Models and methods Forecasting own Properties certain make it self-Link predicting solvency for the company. Furthermore, therefore see that the Selection method

of Forecasting Command is arbitrary, and it depends on my Goal researchers. (Veganzones & Severin, 2021).

The interest in formulating advanced models for predicting financial solvency has emerged in the United States of America since the early sixties of the last century, following the controversy that emerged about the role of the auditor in reporting the possibility of the financial failure of economic projects, which suffer from difficulty in paying their due crises. The American Institute of Certified Public Accountants, the American Stock Exchange, and researchers and professionals conduct academic and professional studies on this subject.

Beaver's research is one of the most important studies using single models to predict financial failure. He presented a comprehensive model of compound financial ratios that may be used as an early warning of financial failure before it occurs.

It was completed development many From Forms Forecasting fail companies and use in contexts different with some Adjustments on me bitter the years in an attempt for help in Forecasting bankrupt companies. It was the first model to predict failed companies. Sample developed it (Beaver, 1966), which I became basically for model’s suffix appeared Forms Other. However, I learned all of them from my data from advanced economies and Lost It was completed. Use these models in context else to test Forecasting fail companies in all from economies advanced and developing and ascendant. Moreover, with that, argue) that Most this is models fail in Forecasting accurately bankruptcy in context Different, as such Event in the environment that was completely developed in it. Me though from that, there is some unanimity on me that Forms Forecasting fails companies no still useful, and she can see Forecasting bankrupt if did not be there Problems methodology in its application in environment Other (Musah & Agyirakwah, 2019).

There is a set of models presented by the accounting literature, such as the Altman model and Sherrod model, which are used in predicting the financial future of companies and their ability to continue. These models showed remarkable success in predicting companies' future in terms of continuity through the studies carried out and applied to companies from different countries. These models are based on a set of ratios developed based on the information in the financial statements (Alia et al., 2019).

The most important of these models will be discussed:

(A)Altman 's z- Score

Prepare Model, developed by Edward A. Altman in 1968, is used to assess the likelihood of a corporation filing for bankruptcy. Utilize selective Altman analysis Multiplex Analysis

(MDA) 66 enterprises manufacture via it. From between these firms, grownup There are 66 enterprises, 33 of which filed for bankruptcy in 1946-1965 represented half of the other competition surviving in 1966. Apply Formula z-Score original on me comp Manufacturing with five pedigree finance included. From likely that organizations face themselves Degree Norm 1.81 financial distress high. Indicate a grade of 3.00 or above for me non-Presence Risk bankruptcy. Localize the incident. Due to faulty preparation, the range between 1.81 and 2.99 is known as region ignorance or region grey. Moreover, she found in her study that 94% of bankrupt companies were assessed in the form of Appropriate, while 95% of bankrupt enterprises were rated as Suitable (ALTMAN, 1968).

"Z = 0.012X 1 + 0.014X 2 + 0.033X 3 + 0.006X 4 + 0.999X5"

(B) J's model

In 2015, Develop Jeehan Almamy And John Aston And the Leonard N. Ngwa Model J standing on me companies British. with this Sample the new, test health companies in The kingdom United. have contributed in the first Model z-Score for Altman (1968). They added the flow cash variable VI from operations / total liabilities.

J = 1.484J1 + 0.043J2 + 0.39J3 + 0.004J4 + -0.424J5 + 0.75J6

(Harjans & Beusichem, 2018)

(C) Revised Z-Score Form (Altman, 2000)

Represent Revised Z grade the original Z-Score model (see Altman, 1968) Adapt it was completed for companies not included (see Altman, 1983). Formula Sample as such following: -

Z = 0.717 * NWC / TA + 0.847 * RE / TA + 3.107 * EBIT / TA + 0.420 * BVE / TA + 0.998 * S / TA

Where: NWC – net-work capital (= CA - CL), TA - Total assets, RE - Earnings retained, EBIT - Earnings Before the benefits and taxes, BVE - Value carrying rights Property, S – sales.

The separator chronological area grey is (1.23; 2.9). About to me Z <1.23, Complete classification company according to Sample on me that it threatened bankrupt; about to me Z > 2.9, It was completed classification company on me that it has not threatened bankrupt, Which that it healthy from side Finance. Test Altman And Sabato (2013) Prototype on me a sample from companies American small and medium companies from 1994 to 2002. It was Precision

aggregate resulting For model 68%, while The error From Type I (the ratio Centennial for companies bankrupt classified on me that it not bankrupt) was 25.81%.

(D) Springate's Model

It was accomplished in 1978 by utilizing the technique of analysis discrimination to derive this sample (see Imanzadeh et al., 2011). Altman served as inspiration for this sample, but it was finished; it has been modified for the Canadian market.

She was present at the moment. It is derived to 92.5%. Can you provide a description example in the format: The formula for S is?

$$S = 1.3 * NWC / TA + 3.07 * EBIT / TA + 0.66 * EBT / CL + 0.4 * S / TA$$

NWC stands for Net Head Money Factor (= CA - CL), TA stands for Total Assets, EBIT stands for Earnings Before Benefits and Taxes, CL stands for Opponent Circulation, and S stands for Sales.

Explanation Sample on my grammar Next: if she was $S < 0.862$, then the company designated threatened bankrupt (Imanzadeh et al., 2011).

(E) Zmijewski's Model

In 1984, Mark Zmijewski served as his model. I miss his analysis-preventive model (see Zmijewski, 1984). Can I put a description sample next to the form?

$$Z = - 4.3 - 4.5 * EAT / TA + 5.7 * TL / TA + 0.004 * CA / CL$$

Where: EAT - earnings distance taxes, TA - Total assets, TL - Total Liabilities, CL - Current Liabilities, CA - Current Asset.

Presents Sample Results in appearance Prospect bankruptcy (P). Complete give this possibility by Formula: $P = 1 / (1 + \exp(-Z))$. about me, $P>0.5$ is considered a company threatened with bankruptcy. (Karas & Srbová, 2019)

(F) Toffler's model (1983)

It was completed Spread Sample in 1977. It is based on building it to me, and Model Altman is based on Sample and method analysis discrimination (see Taffler, 1982). Can a description Sample in the form following?

$$T = 0.53 * EBT / CL + 0.13 * CA / CL + 0.18 * CL / TA + 0.16 * S / TA$$

Where: EBT - Earnings Before taxes, CL - opponents circulating, CA - Asset circulating, TA - Total assets, S - sales.

Separator chronological area gray is (0.2; 0.3). about to me T <0.2, Complete classification company according to Sample on me that it threatened bankrupt, As for about to me T>0.3 she is classified on me that it is not threatened bankrupt, Which that it healthy From side Finance.

A UK-based discriminant function known as the z model is developed to determine the company's solvency solely based on disclosed accounting information. Based on its track record, this demonstrates both true upfront forecasting capabilities and clear operational facilities. Although the form z described in this work, particularly the Derivative Risk Index, can accurately predict company collapse, the model is more appropriately utilized to flag possible financial difficulty. At the same time, there is still time to take recovery action. (Taffler, 1983)

(G) IN 05 's model

That style IN05 he is Style the only from models that It was completed tested which It was completed developed especially for companies Czech.

Makeup Sample Final From four Variables - Yield on me assets on me Basis EAT (net Income / Gross assets), followed by return on me assets on me Basis EBIT (EBIT / Gross assets), and profitability Previous For assets (profits Retained / Total assets) and turnover commitments on me Basis Sales (discounts traded / sales). Can a description of Function Discrimination in Sample in the form following?

Explanation Sample on my grammar Next: for to me M> -0.6, Complete evaluation company on me that it threatened failure (bankruptcy), Otherwise Complete Rated on me that it did not threaten Failed (bankruptcy). A test Sample Presenter on me was completed, a sample learning and the test for the period t + 1, and results are included below. (Karas & Srbová, 2019)

(H) Kida ’s model

According to (2004 This model is one of the modern models that were used in predicting solvency in 1981 AD. It was built on five independent variables of financial ratios according to the following correlation equation:

"Z = 1.042 X1 + 0.42X2 + 0.461X3 + 0.463X4 + 0.271X5"

If the result of the project test according to this model is positive, the project is in a safe state of financial failure, but if the result is negative, the project is threatened with financial failure (**Al-Safrani et al ,2020).**

(I) Z-Score Model

The Z-score technique (developed for construction companies) Regarding the statistical analysis method MDA, has been extensively utilized by academics, government agencies, and corporations to identify companies that are likely to fail (1979). Mason and Harris, respectively. This process involves the creation of a company solvency file. Based on its disclosed financial statements, it is compared to recognized solvent or insolvent financial principles. The closer a company approaches these corporations' fears that it is insolvent, the higher the probability it will fail, and vice versa. The company's solvency dossier is summarized. It is obtained as a single Z-Score indicator from MDA. Approach In my opinion, and he is a Z-Score fashion model. Information is presented in High Dimensions on this site. This outer space single has both lines and loads ratings. The dimension accentuates the distinction between the two classes. (Thomas Ng et al., 2011)

(J) Harris & Abidali ’s Model

This model was developed in 1995) to select comp Building mannequin risk financial decline. Collecting components, the main for the system between analysis the ratio Finance and technology statistic known Based Analysis differentiation Multiple Variables, to produce predictive model makeup From Seven variables, Measures aspects Featured for the structure financial for the company, and all turn to me Values one it is called Degree Z.

Where produced consequences Application Technique Analysis discriminatory linear model discriminatory linear makeup From Seven variables, Measures five aspects Featured for the structure financial for the company, which profitability and liquidity and activity and the

Finance leverage and measurements direction the three will be explained later. **(Abidali & Harris, 1995)**.

MATERIAL AND METHODOLOGY

Descriptive approach in this study uses quantitative models on Elite Contracting Company's financial statements from 2011 to 2017 to determine its financial solvency. SPSS tested the study's hypotheses.

RESULTS AND DISCUSSION

Assessment of the financial solvency of the contracting company

Several models have been developed for early prediction of the solvency of companies in order to help develop the necessary measures to improve them. In order to study the possibility that the studied company is in a good financial position or not, this axis will address two models for measuring the degree of solvency, namely the Z-score 2011 model (Ng) and model Abidali (1995) as the two models were prepared to measure contracting companies.

Assessment of the financial solvency of the contracting company using the Z-score model (Ng): Developed in 2011 by Thomas Ng.

Since the contracting company is an Ashghal (construction) company, the Z-score model developed by (Ng) and Al- Obaidli model will be applied because these two models have been prepared specifically for contracting companies and thus fit with the company's privacy so that they will be worked on according to the following:

$$Z= -1.13 X 1 + 0.004X4 -0.64 X 5 + 3.97 X 7 -0.32 X 12 +2.09 X 13 -0.006 X 17 +1.86$$

The component variables include indicators that measure financing operations, solvency, profitability, and cash flows.

Current asset turnover (X12) and working capital to total assets are the two most discriminating operating metrics (X13).

Current Assets Divided by Turnover (Net Sales Value Divided by Average Current Assets) evaluates a company's ability to generate turnover utilizing current assets. In contrast, working capital to total assets is a measure of the contractor's liquid net assets relative to total capitalization, which is also It was incorporated into Altman's Z-Score model.

Profit indicators, such as total profit divided by revenue (X5) and return on assets (X7), are also essential for the long-term viability of a business (Singh & Tiong, 2006). In addition, the discriminant function revealed two solvency indicators as crucial financial ratios: the current ratio (X1) and the interest coverage ratio (X4).

The current ratio (current assets divided by current liabilities) measures a company's ability to meet current liabilities without liquidating illiquid assets in the short term (Edum-Fotwe et al., 1996).

The interest coverage ratio (EBIT / interest cost) evaluates if the contractor's earnings are sufficient to cover the interest cost. According to Kim, Ramaswamy, and Sundaresan (1993), the default might occur if the firm does not generate enough cash flow to satisfy its existing interest payments.

On the other hand, the independent functions selected the gross cash flow ratio (X17) to assess the company's cash flow stability. A healthy contractor should generate more cash flow when raising money and investing than when operating. Companies designated as "good net worth companies" have positive Z ratings, while those classified as "unsolvable companies "unsolvable companies."

Table No. 1 shows a set of elements that will be relied upon in calculating the variables that make up the model, which was taken from the financial statements of the contracting company for the period from 2010 to 2018 and are shown as follows:

Table 1: The values of the various components of the Iraqi Contracting Company during the period 2011-2018 to calculate the value of Z-Score (Unit: 100,000 Iraqi dinars)

item -- year	2011	2012	2013	2014	2015	2016	2017
Current assets	16189.9	15830.2	18844.4	23168.8	19098.1	6112.4	8861.2
Current liabilities	694.6	1585	3375	1141.5	1247.9	1205.2	1200.2
Working capital	14942	14688.72	15469.5	21583.83	18403.5	15,338.93	15639.15
total assets	26601.69	26250.54	29324.7	23325.48	19275.58	26952.75	27253.76
total liabilities	1247.94	1141.46	3374.96	1585	694.56	1205.15	1200.15
Cash flow	333.26	-1429.3	-11659	-302.06	5656.56	5103.38	274.82
Earnings before interest and Tax	424.43	-555.66	5413.15	6133.28	3482.88	739.13	434.61
short-term sources of financing	3374.96	1141.46	1247.94	1205.15	1205.15	1185.15	1170.34
Revenues	6414.61	269.82	22.28	342.38	429.12	448.42	370.08
Tax	794.68	715.02	14.48	14.48	31.51	31.51	31.51
Earnings	222.81	269.82	464.61	762.6	1117.17	342.38	429.12

Source: Prepared by the authors (2022).

In Table No. 2 a display shows the calculated values of the variables that make up the Z-score model and the score or value. Z - During the study period from 2010 to 2018.

Table 2: The value of the variables of the Z-Score model for the contracting company

	12	13	5	7	1	4	17	Z Score
2011	0.3962	0.5617	0.7677	0.1160	27.5000	9.0354	0.0000	20.74
2012	0.0170	0.5596	-3.1342	0.2067	14.6000	16.8688	0.0000	0.13
2013	0.0012	0.5275	8.6625	0.1594	5.5800	9.0598	0.0000	-1.13
2014	0.0148	0.9253	1.2271	0.0291	13.8700	0.0000	0.0000	1.29
2015	0.0225	0.9548	0.8497	0.0487	12.9700	0.1598	0.0390	-0.07
2016	0.0734	0.5691	0.8045	0.0271	13.7300	1.1351	0.0000	-0.33
2017	0.0418	0.5738	0.9400	0.0157	14.0300	0.0000	0.0000	-3.00

Source: Prepared by the authors (2022).

Interpretation of results for the Z-score (Ng) model

The assessment of the financial solvency of the contracting company in the short term, using the Z-score model, gave positive results, that is, it belongs to the first category, and therefore the company enjoys financial solvency in the short term and this is a result of its strong financial performance during this period and its profits for the years (2011 - 2012). Although the index of the last year was very low, the company is still classified among the companies with good money according to the model used.

In the years following 2012, the financial solvency of the company was in a state of continuous deterioration, except for the year 2014, which is classified among the years in which the company has a good financial solvency, but it is at a low rate, as the company quickly turned to a negative rating, which continued to increase year after year.

Assessment of the financial solvency of the contracting company using the Abidali model (1995):

$$Z= 14.6 + 82Y\ 1 - 14.5Y\ 2 + 2.5Y\ 3 - 1.2Y\ 4 + 3.55Y\ 5 - 3.55Y\ 6 - 3Y\ 7$$

The model's component variables are as follows.

(Y1) Profits after taxes and interest expenditures divided by net capital employed. This is a profitability statistic that includes all required net assets and short-term loans. Capital and fixed assets comprise net employed capital. This metric is extensively utilized in public financial statements to evaluate the return on capital employed (ROCE). This ratio is reasonable. Proof of Company Profitability Value seems to be beneficial for companies with a high net worth and negative for companies with a low net worth.

The ratio of current assets to net assets is denoted by (Y2). This metric quantifies leverage. Those with a high net worth consistently have fewer current assets, including cash, than companies with a low net worth. However, some companies with a low net worth have a high ratio since their net assets are continuously declining, causing this ratio to rise. Bankruptcy is the ultimate illustration of a company's inability to satisfy its short-term financial obligations without selling its long-term assets.

(Y3) represents the ratio of revenue to net assets. This ratio assesses the efficiency with which a corporation utilizes its production capacity and often indicates an inability to respond to market conditions in businesses with a weak financial position. Nonetheless, some low-net-worth corporations have high ratios as a result of higher turnover and a reduction in net assets, since certain low-net-worth companies may have high turnover due to excessive trading. It is a frequent event.

(Y4) represents the ratio of short-term loans to profits before interest and taxes. The loan and overdraft reported on the company's statement of current liabilities constitute short-term loans. It evaluates the relative risk of short-term loans relative to earnings before taxes and interest. This ratio is one technique to evaluate the liquidity of a corporation.

(Y5) tax pattern in businesses with weak financial health, the tax trend is typically downward. When a company is prosperous, the trend increases. The tax can be considered as a share of earnings given to the government; hence, if the company is not profitable, no tax is paid.

(Y6) The profit trend after taxes. Typically, companies with inadequate solvency have negative earnings after taxes. When a company's net worth increases, the trend expands; conversely, when a company's net worth decreases, the trend becomes negative.

Short-term loan fashion (Y7) Trends in short-term loans provide the benefit of evaluating liquidity over time. The bulk of construction companies utilize short-term financing. Unless there are substantial changes in the company or the economy as a whole, the company will have access to long-term funding, such as a bank overdraft or credit granted by its trade creditors, without additional negotiation. In general, subprime lenders rely on short-term loans more heavily than prime lenders. As the organization deteriorates, the pattern increases, reaching crisis proportions prior to its eventual demise.

Some of the calculated elements in Table No. 1 will be relied upon in addition to the calculated elements in Table No. 2 in order to calculate the variables that make up the second model, as the values of these elements were obtained from the financial statements of the

contracting company for the period from 2011 to 2018 , which are explained As in Table (3) , and the following table shows the values of the model variables in addition to the value of Z.

Table 3 shows the values of the model variables in addition to the value of Z

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Z
2011	0.3296	0.6386	0.2530	7.9518	-0.1002	-0.0789	1.1293	32.661
2012	-0.0576	0.6305	0.0107	-2.0542	-0.9798	-1.1717	-0.6618	-3.4786
2013	0.0125	0.7262	0.0009	0.2305	0.0000	-1.2282	0.0933	7.5698
2014	0.0195	1.0657	0.0157	0.1965	1.1767	1.1767	-0.0343	-4.7936
2015	0.0198	1.0278	0.0231	0.3460	0.0000	-0.1321	0.0000	-1.2692
2016	0.0235	0.2374	0.0174	1.6034	0.0000	-0.0106	-0.0166	2.3094
2017	0.0223	0.3401	0.0142	2.6929	-1.0000	-0.0346	-0.0125	-19.037

Source: Prepared by the authors (2022).

Data analysis and results of the Abidali model

The assessment of the financial solvency of the contracting company in the short term, using the Abidali model (1995), gave positive results for the first year, meaning it belongs to the first category. Therefore, the company enjoys financial solvency in the short term due to its strong financial performance during this period and its profits (2011). However, this solvency declined significantly during the year that followed this year (2012). Although the index for the third year was very low, the company is still classified among the companies with good solvency according to the model used.

In the years that followed the year 2013, the company's financial solvency was in a state of continuous deterioration, and the company turned into a negative rating, which continued to increase year after year.

Testing the hypotheses of the study

Hypothesis 1

There is a big difference between Ng-Thomas - ALABIDILI models In forecasting the company's solvency.

In order to test this hypothesis, the Z-value of both models was determined throughout the study once the necessary variables were measured. The goal of this hypothesis was to compare the Abidali-Ng-Thomas models' results in determining the company's solvency over seven years. Therefore, the company that had good financial solvency during the study period and according to the model used took a value of 1 and the company that was not financially solvent during the study period and according to the model used took a value of 0.

In these tests, the hypothesis is that there is no statistically significant association between the two models' outcomes. On the other hand, the researcher's theory confirms the

presence of a meaningful association. as completed, to determine the Presence Relationship between two variables, use the Wilcoxon test classification. The researcher's hypothesis is disproved, and the null hypothesis is accepted if the sig or p-value in the table is greater than 0.05 in either model and vice versa. The null hypothesis is accepted, meaning that there is no significant difference between the results of the Ng-Thomas model and the results of ALABIDILI, as indicated in the table below, where the sig value is.499, which is greater than 0.05.

Table 4

Test Statistics[a]	
	abidali – Ng-Thomas
Z	0 .676 [b]
Asymp. Sig. (2-tailed)	.499
a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.	

Source: Prepared by the authors (2022).

Descriptive Statistics Table5

Descriptive Statistics		
	Mean	Std. Deviation
NG – ZSCORE	.5714	.53452
Al- ABIADILI	.7143	.48795

Source: Prepared by the authors (2022).

Hypothesis 2

The NG Z-Score model is more conservative in estimating a company's solvency than the ALABIDILI model. Due to the continuous data obtained from the two models for both companies, the dependent paired t-test was utilized to test this hypothesis. This hypothesis is evaluated in the table below.

Table 6 Paired Samples Correlations NG- ALABIDILI

Paired Samples Correlations NG- ALABIDILI	
Pearson Correlation	.927
Sig. (2-tailed)	.003

Source: Prepared by the authors (2022).

Table 7 paired Samples Test

Paired Samples Test								
					Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T-value	Sig. (2-tailed)
					Lower	Upper		
Pair 1	NG - ALABIDILI	2.040	5.948	2.248	-7.541	3.461	.907	0 .399

Source: Prepared by the authors (2022).

Looking at the above table, we can see that the sig value is 399. 0, greater than 0.05, indicates no significant difference between the two models' values. The ALABIDILI model, on the other hand, has a higher Z score than the NG model. As a result, we can conclude that the ALABIDILI Z-score is more conservative than the NG Z-score. As a result of this hypothesis, the ALABIDILI model outperforms the NG Z-Score model in predicting the company's solvency, indicating acceptance of the researcher's theory.

Table 8. Statistics about the company with a set of statistical measures for the studied company for the study period 2011 - 2017

Item -year	2011	2012	2013	2014	2015	2016	2017	Mean	Lower	upper	Std.Dev
Current assets	**16189.9**	**15830**	**18844.4**	**23169**	**19098.1**	**6112.4**	**8861.2**	**15444**	**23169**	**6112.4**	**5996**
Current liabilities	**694.6**	**1585**	**3375**	**1142**	**1247.9**	**1205.2**	**1200.2**	**1493**	**3375**	**694.6**	**870**
Working capital	**14942**	**14689**	**15469.5**	**21584**	**18403.5**	**15338.9**	**15639**	**16581**	**21584**	**14688.7**	**2526**
total assets	**26601.7**	**26251**	**29324.7**	**23325**	**19275.6**	**26952.8**	**27254**	**25569**	**29325**	**19275.6**	**3292**
total liabilities	**1247.94**	**1141.5**	**3374.96**	**1585**	**694.56**	**1205.15**	**1200.2**	**1493**	**3375**	**694.56**	**870**
Cash flow	**333.26**	**-1429**	**-11659**	**-302.1**	**5656.56**	**5103.38**	**274.82**	**-289**	**5656.6**	**-11659**	**5711**
Earnings before interest and taxes	**424.43**	**-555.7**	**5413.15**	**6133**	**3482.88**	**739.13**	**434.61**	**2296**	**6133.3**	**-555.66**	**2689**
short-term sources	**3374.96**	**1141.5**	**1247.94**	**1205**	**1205.15**	**1185.15**	**1170.3**	**1504**	**3375**	**1141.46**	**826**
Revenues	**6414.61**	**269.82**	**22.28**	**342.4**	**429.12**	**448.42**	**370.08**	**1185**	**6414.6**	**22.28**	**2310**
Tax	**794.68**	**715.02**	**14.48**	**14.48**	**31.51**	**31.51**	**31.51**	**233**	**794.68**	**14.48**	**357**
interest	**222.81**	**269.82**	**464.61**	**762.6**	**1117.17**	**342.38**	**429.12**	**516**	**1117.2**	**222.81**	**319**

Source: Prepared by the authors (2022).

It seems that the large loss incurred by the company during the year 2012 had a significant impact on the value of the ratio, as the letter reached (84565260), the largest negative number on the list. Add to that the cash flow factor, as there was no cash flow during the previous year; on the contrary, was the negative cash flow by (116,5896019), which is the largest negative cash flow that has a significant impact on the cash volume.

However, the most influential factor is y1 due to the relative importance of this item in the models, especially the Al-Abaidli model, where it formed the highest relative importance in the model variables, representing an indicator of profitability.

This indicates that the company is going through unusual circumstances, where the value of the standard deviation of revenue, flow and profits was very big, Researchers believe that the reason is the conditions of the Iraqi economy during the study period due to security conditions experienced by the country, as well as fluctuating prices and oil revenues In front of the major global currencies, and also, the closing of the Libyan Stock Exchange cannot be overlooked, the main field of the company's work.

CONCLUSIONS

The solvency prediction models share in their structure a set of financial ratios that differ among themselves in terms of quality and weights given to each ratio to form as a whole an indicator that can be used in order to assess the possibilities of declining solvency in which companies may fall in the future. Using modern indicators to evaluate financial performance gives better results than financial ratios characterized by silence.

By applying two models (Ng-Thomas & ALABIDILI) asked the Iraqi Contracting Company to test its solvency, and the results that followed were attained:

The results of the evaluation of the two models for the Iraqi Contracting Company using the models (Ng- Thomas & ALABIDILI, which could predict, gave close results, which is the possibility of the company being exposed to a decline in solvency.

Through these models, the weaknesses in the company were shown, which must be worked on to find solutions and avoid reaching the stage of bankruptcy. Therefore, the Iraqi Contracting Company should work on improving its liquidity position and its working capital management policy, and work to improve profitability by increasing its activity and searching for areas of work that bring more benefit to the company.

Finally, a set of recommendations can be made, which are as follows:

Iraqi Contracting Company must use forecasting models, whose results differ from one model to another. These models could predict the stages of the company's financial decline, which allows the company to face the weakness of solvency before it occurs.

We also recommend using any of the models to evaluate companies operating in the field of public works. Because the two models are compatible with the nature of the work of contracting companies, they can also be used in the bid evaluation process, especially the ALABIDILI model, due to their accuracy.

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