

Enhancing financial failure predicting using Kida and Grover models «Case study of Saidal and Biopharm companies during the period 2022–2023»

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Abstract

The ultimate purpose of establishing a company is to accomplish and maintain the activity for an extended length of time. However, in order to accomplish this goal, effective material and human capacities are needed, capacities that can oversee the company by evaluating both the internal operations of the company and its external surroundings.

But, as the business matures, it encounters challenging conditions brought on by internal or external forces, whether they originate in the nation in which it conducts business or from foreign entities with whom it transacts. This results in financial failure that could eventually lead to bankruptcy for the company.

Given the variety of instruments available, the company's management must possess the abilities and resources to anticipate financial failure before it happens in order to surmount these challenges and avoid financial failure.

Since Saidal and Biopharm are the only two businesses with a focus on producing pharmaceutical materials and are listed on the Algiers Stock Exchange, we attempt to apply the Kida and Grover models to these two institutions in this study. Given that their financial statements are consistent with the financial statements, our study's findings will be positively impacted by the fact that their financial statements are trustworthy and compliant with International Accounting Standards (IAS/IFRS).

The purpose of this study was to demonstrate how the Kida and Grover failure prediction models can be used to improve the prediction of financial failure. To this end, we applied both models to the Saidal and Biopharm companies, using the deductive approach in the theoretical part to make theoretical concepts related to the study variables clearer and simpler, and the inductive approach in the applied part to analyze and interpret the findings. Based on these approaches, the study concluded that the Kida model indicates a high likelihood of financial failure for the Saidal and Biopharm companies, while the Grover model indicates that the two companies are not at risk of bankruptcy.

Keywords: Financial failure; Kida model; Grover model; Saidal; Biopharm.

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1. Introduction

The ultimate goal of establishing companies is to achieve and continue the activity for a longer period, but achieving this goal requires efficient material and human capacities of overseeing the company through their capacity to assess the internal workings of the company as well as its exterior surroundings.

However, during its life cycle, the company faces difficult circumstances due to factors occurring internally or externally, whether in the country in which it operates or the international parties with which it deals, which causes its financial failure that may lead to bankruptcy.

To overcome these obstacles and prevent financial failure, the company's leaders need to have the skills and tools that allow them to predict before financial failure occurs, given that there are numerous instruments available for forecasting financial collapse, which is embodied in financial failure prediction models, which are mathematical equations that comprise financial ratios, so that each model was developed in accordance with the situation and the researcher's vision.

Within this research, we try to apply the Kida and Grover models to the two companies (Saidal and Biopharm), because they are the only two companies specialized in the production of pharmaceutical materials and listed on the Algiers Stock Exchange. This means that their financial statements are reliable and have been prepared in accordance with the International Accounting Standards IAS/IFRS, which will positively reflect on the results of our study because it is in accordance with the financial statements.

1.1 The study's problem

In light of the aforementioned, the study problem is formulated as follows:

Does the use of Kida and Grover models enhance the forecasting of the Saidal and Biopharm companies' financial failure in the 2022 – 2023 timeframe?

1.2 Hypotheses' of study

The two following hypotheses will be tested in order to provide an answer to the study problem:

- H_0 : The Kida and Grover models do not contribute to enhancing the prediction of financial failure;
- H_1 : The Kida and Grover models contribute to enhancing the prediction of financial failure.

1.3 The study's importance

The following factors make our study important:

- Demonstrating how Kida and Grover's model can be used to predict financial failure;
- Figuring out Saidal and Biopharm companies' financial situation during the last two years (2022 and 2023).

1.4 Study objective

The aim of our study is to provide suggestions to Saidal and Biopharm in the event of indications of a possible financial failure.

1.5 Study approach

We will use the deductive approach in the theoretical aspect in order to explain the theoretical concepts related to the study, and in order to evaluate the study's findings practically, we'll apply the inductive approach.

2. Literature review

Financial failure is the multifaceted notion that lends itself to several approaches. From a legal point of view, financial failure is associated with the cessation of payments and its liquidation [1], regarding the macroeconomic perspective, it highlights the impact of interest rate levels, wages, currency rates, price levels and GDP developments on the risk bankruptcy [2], as the general approach the incapacity of a company to pay its present debts when they become due is known as financial failure [3].

The reasons that lead to financial failure are as follows [4]:

- **Decline in activity:** it includes a set of reasons (accidental or cyclical drop in demand, downward trend in demand and loss of an important client);
- **Decline in profits and profitability:** it includes a set of reasons (selling price rigidity, inappropriate strategic decisions and personnel costs are too high);
- **Various management issues:** it contains a number of causes, such as (the manager's lack of technical skills, limited knowledge of production cost, the weakness of the leader and chaos or disagreement within the management team);
- **Specific cash flow issues:** these includes a set of reasons (reduction of bank loans and failure of high-value customers);
- **Unexpected reasons:** it includes a set of reasons (calamities, financial malfeasance and the death or the manager's sickness).

The most notable indicators of failure are [5]:

- An imbalance exists in the company's financial structure;
- A string of unprofitable and declining periods;
- The company fails to identify profitable activities and pays suppliers' dues late;
- No competition exists;
- Incorrect use of accounting policies requires considerable reserves to compensate for possible losses.

The categories of financial failure are as follows [6]:

- **Creeping financial failure:** this type of failure is frequently brought on by a number of internal factors, including excessive use of debt, ineffective management, wasteful use of resources, increased relative costs and inappropriate expansion. Ultimately, it impacts essential elements of a company, such as its management efficiency and financial structure;
- **Technical insolvency:** is characterized by the fact that the management of a company cannot pay its debts, even if its present assets exceed its current liabilities. This insolvency situation is frequently connected to a company’s lack of liquidity;
- **Economic failure:** occurs when a company’s revenues are not sufficient to cover all expenses, including capital costs. More precisely, the economy failure happens when the company fails to obtain an adequate return on its invested capital relative to the anticipated risks;
- **Actual insolvency:** it happens when the company cannot meet its obligations, even with an adequate period of time. It often happens that the company’s total liabilities can often be greater than its total assets;
- **An unexpected financial failure:** this category of failure happens unexpectedly due to external elements such as politics, economics, laws, social, technological or natural changes about which the company has little control.

The phases of financial failure are as follows [7]:

- **The incubation phase:** During this phase, the company can readily lower the risk because it is not yet at an advanced phase of its commercial failure, but the company’s management has many negative signs to correct, such as high indirect expenses, increased competition and insufficient loans from financial institutions and banks;
- **The phase of deficit cash flow:** During this phase, the company is faced with the difficulty of meeting its current and pressing commitments. Considering that the assets of the company exceed its liabilities, it is challenging to turn these assets into cash so that the obligations can be paid, besides the fact that a significant amount of working capital is made up of inventory and accounts receivable;
- **The financial difficulty phase:** In this phase, the company cannot obtain the necessary funds to repay its overdue debts, and it is possible to solve this phase in an extended period of time. Most companies manage to avoid this step by negotiating effectively with the debtor and offering payment rescheduling conditions in return;
- **The complete failure phase:** This is a critical phase in the company’s life, when it can no longer deny the failure, and all management tries to secure the funding have failed. Thus, the complete failure of the company occurs and carries out legal procedures concerning bankruptcy.

3. Methods

3.1 Study sample

The study sample consists of Saidal and Biopharm, and the following table shows the most important information related to these two companies:

Table 1
Overview of the study sample

Company name	Creation date	The nature of the company	Company activity	The company’s capital	Website
Saidal	1982	Public	Pharmaceutical industry	2.500.000.000 Algerian dinars	saidalgroup.dz
Biopharm	1992	Private	Pharmaceutical industry	5.104.000.000 Algerian dinars	biopharmdz.com

Source: prepared by the author based on the companies’ websites

3.2 Model of study

Financial failure can be predicted using a variety of models, but because they are so numerous, we chose two models in our study, the Kida and Grover models, for the reasons that were discussed in the study’s introduction.

3.2.1 Kida model

It is seen as one of the most relevant quantitative models for anticipating financial failure [8], where a discriminatory analysis was carried out using 20 financial ratios and a database that brought together 40 companies from 1974 to 1975. In this sample, the number of companies in difficulty and not in difficulty was identical [9]. Therefore, the formula for the Kida model is as follows [10]:

$$Z = 1.042 x_1 + 0.42 x_2 - 0.461 x_3 - 0.463 x_4 + 0.271 x_5$$

Whereas,

X₁ represents net income before taxes / total assets

X₂ represents total equity / liabilities

X₃ represents liquid assets / current liabilities

X₄ represents revenues / total assets

X₅ represents cash / total assets

Kida’s model states that companies with a negative Z-score are more likely to fail, while companies with a positive Z-score are perceived as being protected from failure. It is noteworthy to emphasize that this model has proven 90 % predictability in case of financial failure one year before bankruptcy [11].

3.2.2 Grover model

The Altman’s model has been modified and updated by the Grover model (G-score) [12]. Grover utilizes the three most important financial ratios to anticipate a company’s failure [13], so Grover used x_1 and x_3 from the Altman model and added the profitability ratio (ROA) [14], where the formula of Grover’s model is as follows [15]:

$$G\text{-score} = 1,650 x_1 + 3,404 x_2 - 0,016 ROA + 0,057.$$

Whereas:

X_1 represents working capital / total assets.

X_2 represents earnings before interest and tax / total assets.

ROA represents net income / total assets.

The following is how G-score values are interpreted [16]:

- **The score is less than -0,02:** The companies are classified as bankrupt;
- **Score greater than 0, 01:** Companies classified as not bankrupt.

4. Result and Discussion

4.1 Utilizing the Kida model

4.1.1 The Kida model applied to Saidal Company

Table 2

Z – Score values based on the Kida model

Financial ratios	2022	2023
Net profits before taxes	-2 836 336 152,93	1 901 602 815,86
Total assets	44 880 800 299,74	49 318 064 603,41
Total equity	18 965 371 886,37	21 924 496 337,55
Liabilities	25 915 428 413,37	27 393 568 265,86
Liquid assets	19 140 625 375,53	23 331 599 636,65
Current liabilities	10 303 534 002,92	11 108 425 350,99
Revenues	15 518 343 549,99	19 410 065 548,95
Cash	3 811 227 755,04	3 997 304 817,23
X_1	-0,063	0,038
X_2	0,731	0,800
X_3	1,857	2,100
X_4	0,345	0,393
X_5	0,084	0,081
Z - Score	-0,751	-0,752

Source: prepared by the researcher using the company’s financial statements

Based on Table 2’s findings, all values of Z- Score are negative, this explains the high probability of financial failure in Saidal Company based on the Kida model. The company’s level of mismanagement is the cause of these unfavorable results, which required the Algerian state to make a radical change in this company’s administrative staff.

4.1.2 Utilizing the Kida model at the Biopharm Company

Table 3

Z – Score values based on the Kida model

Financial ratios	2022	2023
Net profits before taxes	10 349 000 000	10 532 000 000
Total assets	82 694 000 000	94 914 000 000
Total equity	49 258 000 000	54 367 000 000
Liabilities	33 437 000 000	40 547 000 000
Liquid assets	64 166 000 000	65 569 000 000
Current liabilities	30 091 000 000	32 248 000 000
Revenues	83 818 000 000	82 917 000 000
Cash	8 122 000 000	5 366 000 000
X_1	0,125	0,110
X_2	1,473	1,340
X_3	2,132	2,033
X_4	1,013	0,873
X_5	0,098	0,056
Z - Score	-0,676	-0,648

Source: prepared by the researcher using the company’s financial statements

It is evident from Table 3's data that the Z – Score values for 2022 and 2023 are negative. Based on the Kida model, these results indicate that the Biopharm Company has a high likelihood of experiencing financial failure.

The following factors were the main causes of the occurrence of negative values:

- The Corona pandemic in 2020 and 2021, made it difficult for Biopharm to obtain medical raw materials due to the high demand for them internationally;
- The Algerian state has limited the random import of all goods and services, by specifying a list of goods and services permitted to be imported, which has had a negative impact on the import of medical raw materials throughout the years 2022 and 2023.

4.2 Using Grover's model

4.2.1 Using Grover's model to the Saidal Company

Table 4

G-score values related to the Saidal Company

Financial ratios	2022	2023
Total assets	41 471 000 914,77	45 571 840 504,21
Working capital	16 449 965 771,80	19 121 452 664,93
Earnings before interest and tax	-2 813 506 284,84	1 651 740 520,97
Net income	-2 815 031 941,60	1 735 846 850,66
X ₁	0,396	0,419
X ₂	-0,067	0,036
ROA	-0,067	0,038
G-score	0,438	0,870

Source: prepared by the researcher using information from the company's financial statements

Based on Table 4, we notice that all G-score values are more than 0,01, and therefore these results, according to Grover's model, mean that Saidal Company is not in danger of going bankrupt.

4.2.2 Using Grover's model to the Biopharm Company

Table 5

G-score values related to the Biopharm Company

Financial ratios	2022	2023
Total assets	82 694 000 000	94 914 000 000
Working capital	49 258 000 000	54 367 000 000
Earnings before interest and tax	10 349 000 000	10 532 000 000
Net income	8 431 000 000	8 505 000 000
X	0,595	0,572
X	0,125	0,110
ROA	0,101	0,089
G-score	1,462	1,373

Source: created by the researcher using information from the company's financial statement

Based on Table 5, we notice that all G-score values are more than 0,01, and therefore these results, according to Grover's model, mean that Biopharm Company is not exposed to bankruptcy.

5. Concluding remarks

The following conclusion is reached in light of the aforementioned:

- Models for predicting financial failure are crucial for improving financial failure prediction, therefore we accept hypothesis H₁ and reject hypothesis H₀;
- There is a high probability of financial failure in Saidal and Biopharm companies according to the Kida model;
- According to Grover's model, Saidal and Biopharm companies are not at risk of bankruptcy.

Thus, some recommendations can be made to the managers of the Saidal and Biopharm companies in order to improve their financial situation:

- Encouraging scientific research laboratories in the field of pharmaceutical production, in order to increase the number of manufactured products as well as improve their therapeutic effectiveness, which will positively reflect on the financial results of Saidal and Biopharm companies;
- Placing significant emphasis on the internal audit unit's capacity to forecast the likelihood of financial failure, because improving risk management procedures is one of an internal audit's current responsibilities.

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