computer sciences and mathematics forum

MDPI

Proceeding Paper

Financial Distress Analysis of Technology Companies using Grover Model

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Abstract: The decision making process is of utmost importance since it dictates what will be chosen. Good decision making may lead to an ideal result that decision maker wishes to achieve. Decision making process is highly essential for the organization and investors to go through before making decisions. Proper and thorough planning can help the investors to make a good decision and hence, they are able to gain profits. As a result, it is important to conduct a financial distress analysis on the companies in order to understand their financial condition. In this study, the financial performance of the technology companies is assessed by Grover model. Financial ratios such as working capital to total asset, earnings before interest and taxes to total asset, and net income to total asset are analyzed in this study with Grover model. Each of the companies will obtain a G-score based on their financial performance. Grover model is capable to categorize the companies either into safe, grey or distress zones. The findings of this paper depict that 28 companies are performing well during this period of study. It indicates that these companies are performing well in terms of financial performance. Therefore, this provides insights to the investors to identify the companies with good financial performance for investment. Besides, the identified companies in safe zone can serve as a reference to other companies for benchmarking.

Keywords: grovel model; financial distress; financial ratios; technology companies

Citation: Liew, K.F.; Lam, W.S.; Lam, W.H. Financial Distress Analysis of Technology Companies using Grover Model. *Comput. Sci. Math. Forum* **2023**, *6*, x. https://doi.org/10.3390/xxxxx

Academic Editor(s): Name

Published: 28 April 2023

1. Introduction

Nowadays, the business environment is fast-moving and complex. Decision-making became very challenging due to the current levels of uncertainty and ambiguity [1]. In the scenario of investment, investors usually need to make numerous decisions. The decisions made by the investors can be either complex or simple, with a low or high impact [2]. Therefore, it is very crucial for investors to conduct many kinds of research and analyses before making an optimal decision. The selection of the stock for investment is a decision making process that involved much research and studies. Decision making in investment can never be an easy task without proper and thorough planning and investigation.

Investors need to do numerous research before making an investment decision. A thorough and detailed analysis should be carried out in order to increase the confidence of the investors during the process of investment decision making. Decision making plays a central role in business management. Making a right decision at a right time is extremely important to the business and company [3]. Decision making is defined as the act of selecting between two or more available alternatives [3,4]. Effective and successful decision making can help the organization to gain profits. On the other hand, ineffective or poor decision making will lead the organization to make losses. Hence, the process of decision making should be carried out by the organization and investors in order to obtain profits and benefits as much as possible.

Grover model has been applied in various fields, for instance, Indonesia Stock Exchange [5,6], retail trade sub sectors [7], consumer goods company [8] and coal subsector mining companies [9]. As a result, Grover model is suitable to be adopted to evaluate the financial condition of the companies. The main goal of this study is to determine the financial status of the companies, as well as to provide a reference to those companies that are not financially sound for benchmarking purposes. In this study, the financial condition of the companies is determined by Grover model. By getting the company's financial data from the financial statement, the financial status of the companies can be determined and identified [10,11]. Moreover, this study can serve as a reference for those investors to have a glance at the current financial status of the companies. Financial performance analysis of the companies is important in decision making process by the organization and investors [12,13]. This study is significant to identify the financial status of the companies as well as to provide a benchmark for those companies that are not financially sound to make improvements in the future. The structure of the paper is presented as follows. Section 2 shows the methods used in this study. The results and discussion of this study are presented in Section 3. Lastly, a conclusion is drawn at the end of this paper.

2. Methods

In this paper, the financial performance of the companies is evaluated by Grover model. Based on past studies, the Grover model is a well-known tool that is utilized to assess the financial performance of companies. The companies that used to be investigated in this study are the listed technology companies in Bursa Malaysia. The period of the study is from the year 2016 to 2020.

The financial performance of the companies is measured by the Grover model. The formulation of the Grover model is as shown below [14–16]:

$$G - score = 1.650X_1 + 3.404X_2 - 0.016X_3 + 0.057$$

where

$$X_1 = \frac{\text{working capital}}{\text{total asset}}$$

$$X_2 = \frac{\text{earnings before interest and taxes}}{\text{total asset}}$$

$$X_3 = \frac{\text{net income}}{\text{total asset}}$$

For Grover model, three important financial ratios are taken into consideration to determine the performance of the company. The three financial ratios include working capital to total asset, earnings before interest and taxes to total asset, and net income to total asset. Each of the companies will achieve a G-score based on their performance. After that, the companies will be categorized either into one of these three different zones. The companies could be falling into the safe zone, grey zone or distress zone. If the company is able to obtain a G-score of at least 0.01, the company will be categorized into the safe zone. In other words, the company is performing well in terms of financial performance and the company is financially stable. If the company achieves a G-score of lower than −0.02, it indicates that the company shows poor performance and hence, the company is grouped into the distress zone. The company is facing financial distress if the company is categorized into the distress zone. Lastly, the companies that achieve a G-score of in between −0.02 and 0.01, these companies will be classified into the grey zone [17].

3. Results and Discussion

In this study, Grover model is proposed to examine the financial performance of the listed technology companies. Table 1 depicts the three financial ratios' values for 32 companies and the companies' G-score for the year 2020.

Table 1. G-score calculation for the year 2020.

Company	X_1	X_2	X_3	G-score	Zone
ARBB	0.3620	0.1810	0.1702	1.2677	Safe
CENSOF	0.2405	−0.6412	−0.6502	−1.7186	Distress
CUSCAPI	0.2760	−0.1704	−0.1931	−0.0648	Distress
D&O	0.2425	0.0871	0.0645	0.7527	Safe
DATAPRP	0.5810	−0.2257	−0.2301	0.2512	Safe
DIGISTA	0.0700	0.0511	−0.0077	0.3467	Safe
DSONIC	0.3008	0.1762	0.1554	1.1506	Safe
EDARAN	0.0528	0.0660	−0.0648	0.3697	Safe
EFORCE	0.4422	0.1384	0.1051	1.2560	Safe
ELSOFT	0.6496	0.0413	0.0060	1.2692	Safe
FRONTKN	0.4925	0.1830	0.1326	1.4906	Safe
GHLSYS	0.3394	0.0461	0.0197	0.7735	Safe
GTRONIC	0.5318	0.1465	0.1522	1.4308	Safe
HTPADU	0.1259	0.0476	0.0291	0.4263	Safe
INARI	0.4991	0.1092	0.1064	1.2504	Safe
ITRONIC	0.0345	−0.0247	−0.0259	0.0303	Safe
JCY	0.5099	0.0097	0.0226	0.9309	Safe
JHM	0.3715	0.0945	0.0638	0.9905	Safe
KESM	0.5660	0.0340	0.0002	1.1067	Safe
MMSV	0.7710	0.0020	0.0279	1.3355	Safe
MPI	0.4250	0.1024	0.0761	1.1056	Safe
MSNIAGA	0.3665	−0.0582	−0.0514	0.4646	Safe
MYEG	0.2836	0.1969	0.1896	1.1922	Safe
NOTION	0.2546	−0.0122	0.0112	0.4352	Safe
OMESTI	−0.0629	0.0817	0.0574	0.2304	Safe
PENTA	0.6117	0.1279	0.0851	1.5004	Safe
THETA	0.8060	−0.0513	−0.0942	1.2138	Safe
TURIYA	−0.0222	0.0254	0.0029	0.1068	Safe
UNISEM	0.3132	0.0773	0.0629	0.8360	Safe
VITROX	0.5618	0.1447	0.1390	1.4745	Safe
VSTECS	0.5219	0.0763	0.0658	1.1769	Safe
WILLOW	0.6389	0.0705	0.0846	1.3498	Safe

According to Table 1, each of the companies is able to obtain a G-score based on their financial performance. The companies that fall into the safe zone are ARBB, D&O, DATAPRP, DIGISTA, DSONIC, EDARAN, EFORCE, ELSOFT, FRONTKN, GHLSYS, GTRONIC, HTPADU, INARI, ITRONIC, JCY, JHM, KESM, MMSV, MPI, MSNIAGA, MYEG, NOTION, OMESTI, PENTA, THETA, TURIYA, UNISEM, VITROX, VSTECS and WILLOW. Since the G-scores of these companies are more than 0.01, this indicates that these companies are performing well in terms of financial performance for the year 2020. It also shows that these 30 companies (93.75%) are financially stable. On the other hand, the G-scores achieved by CENSOF and CUSCAPI are −1.7186 and −0.0648, respectively. Thus, it clearly shows that CENSOF and CUSCAPI are grouped into distress zone since their G-scores are less than −0.02. Therefore, these two companies (6.25%) are in financial distress. The findings demonstrate that CENSOF and CUSCAPI do not show good financial performance. As a recommendation, CENSOF and CUSCAPI can take the other well-performed companies as a benchmark for future improvement purposes.

Table 2 presents the G-score calculation achieved by the technology companies for the years 2016, 2017, 2018, 2019 and 2020.

Table 2. G-score calculation for the years 2016, 2017, 2018, 2019 and 2020.

Company	2016	2017	2018	2019	2020
ARBB	−1.3306	−0.0767	1.4200	1.9092	1.2677
CENSOF	0.7785	0.0556	0.0094	0.1204	−1.7186
CUSCAPI	−1.4839	−0.9921	0.1854	0.3682	−0.0648
D&O	0.6465	0.7650	0.7650	0.7084	0.7527
DATAPRP	0.9546	0.8456	0.6485	−0.6526	0.2512
DIGISTA	0.8332	0.6696	0.7002	0.5451	0.3467
DSONIC	1.2231	1.1538	1.1684	0.8880	1.1506
EDARAN	0.0594	−0.0023	0.4991	0.2082	0.3697
EFORCE	1.2188	1.6242	1.1765	1.1309	1.2560
ELSOFT	1.8521	1.9120	2.1109	1.3970	1.2692
FRONTKN	0.8930	0.9134	1.2776	1.4234	1.4906
GHLSYS	0.7037	0.7105	0.7003	0.7317	0.7735
GTRONIC	1.3425	1.0953	1.3944	1.3028	1.4308
HTPADU	0.4954	0.2917	−0.0605	0.4930	0.4263
INARI	1.3705	1.4374	1.5981	1.4022	1.2504
ITRONIC	−0.5846	−0.6386	−0.2661	0.0376	0.0303
JCY	0.7821	0.8206	0.6810	0.7206	0.9309
JHM	1.1431	1.6939	1.3090	1.1964	0.9905
KESM	0.9574	0.8263	1.0194	0.9276	1.1067
MMSV	1.6917	2.2131	1.7395	1.7319	1.3355
MPI	1.1800	1.2222	1.1036	1.1864	1.1056
MSNIAGA	0.7426	0.8594	0.5643	0.4910	0.4646
MYEG	1.1825	1.3556	1.0087	0.9500	1.1922
NOTION	0.7053	0.7568	1.1096	0.6059	0.4352
OMESTI	0.1569	0.1264	−1.3098	−0.0681	0.2304
PENTA	1.5652	1.2951	1.5424	1.6734	1.5004
THETA	1.0277	1.1431	1.2046	1.2749	1.2138
TURIYA	0.1741	0.1802	0.1811	0.1837	0.1068
UNISEM	0.6766	0.7634	0.6077	0.5055	0.8360
VITROX	1.4849	1.5227	1.5906	1.4284	1.4745
VSTECS	1.1260	1.1698	1.1569	1.0434	1.1769
WILLOW	1.6118	1.4879	1.3787	1.4106	1.3498

Based on Table 2, it can be observed that 24 companies are falling into the safe zone throughout the 5-year period, that is accounting for 75%. On the one hand, there are eight companies are categorized either into the grey zone or distress zone for particular years. These companies include ARBB, CENSOF, CUSCAPI, DATAPRP, EDARAN, HTPADU, ITRONIC and OMESTI. As a result, the financial performance of these companies should be monitored properly so that these companies can make some enhancements and avoid entering the grey zone or distress zone again in the future. Throughout the 5-year period, two companies are falling into the distress zone about three times out of five. Hence, CUSCAPI and ITRONIC are needed to pay more attention and effort in improving their financial performances.

Table 3 shows the average G-score achieved by each company for the 5-year period.

Table 3. Average G-score for the 5-year period.

Company	Average G-score	Zone
ARBB	0.6379	Safe
CENSOF	−0.1510	Distress
CUSCAPI	−0.3974	Distress
D&O	0.7275	Safe
DATAPRP	0.4095	Safe
DIGISTA	0.6190	Safe

DSONIC	1.1168	Safe
EDARAN	0.2268	Safe
EFORCE	1.2813	Safe
ELSOFT	1.7082	Safe
FRONTKN	1.1996	Safe
GHLSYS	0.7239	Safe
GTRONIC	1.3132	Safe
HTPADU	0.3292	Safe
INARI	1.4117	Safe
ITRONIC	−0.2843	Distress
JCY	0.7870	Safe
JHM	1.2666	Safe
KESM	0.9675	Safe
MMSV	1.7423	Safe
MPI	1.1596	Safe
MSNIAGA	0.6244	Safe
MYEG	1.1378	Safe
NOTION	0.7225	Safe
OMESTI	−0.1728	Distress
PENTA	1.5153	Safe
THETA	1.1728	Safe
TURIYA	0.1652	Safe
UNISEM	0.6778	Safe
VITROX	1.5002	Safe
VSTECS	1.1346	Safe
WILLOW	1.4478	Safe

Based on the results, there is a total of 28 technology companies (87.5%) are well-performing over the 5-year period, which is from 2016 to 2020. As a result, these healthy companies are grouped into the safe zone. These companies consist of ARBB, D&O, DATAPRP, DIGISTA, DSONIC, EDARAN, EFORCE, ELSOFT, FRONTKN, GHLSYS, GTRONIC, HTPADU, INARI, JCY, JHM, KESM, MMSV, MPI, MSNIAGA, MYEG, NOTION, PENTA, THETA, TURIYA, UNISEM, VITROX, VSTECS and WILLOW. Among the healthy companies, MMSV is the best since it obtains the highest G-score, which is 1.7423. In other words, MMSV outperformed the other companies. On the other hand, the companies that are experiencing financial distress over the study period are CENSOF, CUSCAPI, ITRONIC and OMESTI. These companies perform under the par. The percentage of companies that are in the financial distress zone is 12.5%. Based on the findings, CUSCAPI achieves the lowest G-score, which is −0.3974. Thus, CUSCAPI is classified as the most underperformed company. Finally, these not sound financially companies need to take immediate actions in order to improve themselves in terms of financial performance. The companies with good financial performance can be served as a benchmark to the companies such as CENSOF, CUSCAPI, ITRONIC and OMESTI for further enhancement.

4. Conclusions

Decision making is important to be considered in almost every single aspect. Good decision making can lead to a better outcome. It is extremely beneficial to the investors as well as the organization. Proper planning can gain a better insight into the situation and hence, it can reduce unnecessary risk and uncertainty. Decision making in investment needs to be planned carefully. The importance of analyzing and studying the stock market cannot be denied since thorough research indeed plays an imperative role during the process of investment decision making. Therefore, this study aims to evaluate the financial condition of the companies with Grover model. Grover model takes three important financial ratios into consideration to assess the financial performance of the companies. The major findings of this study depict that 28 technology companies exhibited good financial

performance over the study period of 2016 to 2020. Moreover, this study also served as a good reference to those underperformed companies to enhance themselves in terms of financial performance. For future research, Grover model is recommended to measure the performance of the company from different sectors.

Acknowledgments: This study is supported by Universiti Tunku Abdul Rahman (UTAR), Malaysia.

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