

THE RELATIONSHIP BETWEEN PROFITABILITY AND BANKRUPTCY ASSESSMENT BASED ON LIS'S FOUR-FACTOR MODEL. CASE STUDY OF THE ALCOHOLIC BEVERAGE COMPANY

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Abstract

In the article, we researched the key indicators of Diageo Corporation, aiming to identify the most risky trends. For the study the chosen time lag was the trend of the last 10 years.

Diageo is a part of the beverage industry. Its business involves the supply of alcoholic beverage under a collection of brands such as Johnnie Walker, Crown Royal, Buchanan's and Windsor whiskies, Smirnoff, Cîroc and Ketel One vodkas.

Diageo's dividend grew at a compound annual rate of almost 6%, which is far ahead of inflation and more than enough the most income investors to keep happy.

Using methodological assessment, we assessed the profitability of the company, for which we identified return on equity, economic profitability, and net return on assets.

Taking into account the analysis conducted and the indicators recorded during the assessment, we considered it essential to assess the company's bankruptcy risk. For this purpose, we used the bankruptcy risk assessment method by R. Liss, which is widely used in international practice.

The assessment recorded as a result of the model implementation is perceived as a safe financial situation for the company.

Keywords: return on equity, economic profitability, net return on assets, profitability assessment, risk assessment, model by Lis.

**ՇԱՀՈՒԹԱԲԵՐՈՒԹՅԱՆ ԵՎ ՄՆԱՆԿՈՒԹՅԱՆ ՄԻՋԵՎ
ՀԱՐԱԲԵՐՈՒԹՅՈՒՆԸ՝ ՀԻՄՆՎԱԾ ԼԻՍԻ ՉՈՐՍ
ԳՈՐԾՈՆ ՄՈԴԵԼԻ ԳՆԱՀԱՏՄԱՆ ՎՐԱ: ԱԼԿՈՀՈԼԱՅԻՆ
ԽՄԻՉՔՆԵՐ ԱՐՏԱԴՐՈՂ ԸՆԿԵՐՈՒԹՅԱՆ ԴԵՊԻ
ՈՒՍՈՒՄՆԱՍԻՐՈՒԹՅՈՒՆ**

ԼԻԱՆԱ ԳՐԻԳՈՐՅԱՆ

Հայաստանի պետական տնտեսագիտական համալսարանի
կառավարչական հաշվառման և աուդիտի ամբիոնի վարիչ,
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Համառոտագիր

Հոդվածում ուսումնասիրել ենք **Դիազետ** կորպորացիայի հիմնական ֆինանսական ցուցանիշները՝ նպատակ ունենալով բացահայտել ամենա-
նիսկային միտումները: Հետազոտության համար ընտրված ժամանակային
լագ է համարվել վերջին 10 տարվա միտումը:

Դիազետ կորպորացիան խմիչքների արդյունաբերության մի մասն է:
Վերջինիս բիզնեսը ներառում է ալկոհոլային խմիչքների մատակարարում
այնպիսի ապրանքանիշերի հավաքածուի ներքո, ինչպիսիք են՝ “Johnnie
Walker”, “Crown Royal”, “Buchanan’s” և “Windsor” վիսկիները, “Smirnoff”,
“Ciroc” և “Ketel One” օղիները:

Միայն 2024 թվականի առաջին կիսամյակում ընկերության շահաբա-
ժինն աճել է գրեթե 6 տոկոսով, ինչը ոչ միայն խոստումնալից ցուցանիշ է,
այլև ներդրողների տեսանկյունից գրավիչ:

Հոդվածում, մեթոդական գնահատման միջոցով, գնահատել ենք ըն-
կերության շահութաբերությունը, որի համար վերլուծել ենք սեփական կա-
պիտալի եկամտաբերությունը, տնտեսական շահութաբերությունը և ակտիվ-
ների զուտ եկամտաբերությունը:

Հաշվի առնելով իրականացված վերլուծության պատկերը և գնահատ-
ման ընթացքում արձանագրված ցուցանիշները, առանցքային ենք համարել
ընկերության սնանկության ռիսկի գնահատման անհրաժեշտությունը: Այդ
նպատակով օգտագործել ենք միջազգային պրակտիկայում լայն կիրառու-
թյուն գտած Ռ. Լիսի սնանկության ռիսկի գնահատման մոդելը: Մոդելի տե-
ղայանացման արդյունքում արձանագրված գնահատականն ընկերության

համար ընկալվում է անվտանգ ֆինանսական իրավիճակ:
Բանալի բառեր՝ սեփական կապիտալի եկամտաբերություն, տնտեսական շահութաբերություն, ակտիվների զուտ եկամտաբերություն, շահութաբերության գնահատում, ռիսկի գնահատում, Լիսի մոդել:

Introduction
Stock split history for Diageo since 1996. Prices shown are actual historical values and are not adjusted for either splits or dividends. Please see the “Historical Prices” tab for adjusted price values.
Historical daily share price chart and data for Diageo since 1996 adjusted for splits and dividends. The latest closing stock price for Diageo as of January 17, 2025 is 118.79.
➤ The all-time high Diageo stock closing price was 206.66 on January 04, 2022.
➤ The Diageo 52-week high stock price is 154.71, which is 30.2% above the current share price.
➤ The Diageo 52-week low stock price is 113.99, which is 4% below the current share price.
➤ The average Diageo stock price for the last 52 weeks is 134.14.

Table 1.
Diageo Historical Annual Stock Price Data⁴

Year	Average Stock Price	Year Open	Year High	Year Low	Year Close	Annual % Change
2025	120.4218	126.1200	126.1200	114.5000	118.7900	-6.56%
2024	133.2054	139.8251	150.1531	117.7514	127.1300	-10.08%
2023	160.7228	166.8902	181.0788	134.8553	141.3879	-16.35%
2022	175.0697	205.5487	206.6560	154.5880	169.0148	-17.48%
2021	172.7873	145.4202	206.3582	140.3875	204.8230	41.72%
2020	129.1851	148.0056	151.5116	91.9190	144.5283	-3.32%
2019	143.1737	121.1289	156.1981	119.9735	149.4879	21.35%
2018	121.8009	123.0071	129.3614	113.0928	123.1878	-0.47%
2017	104.6023	86.1450	123.7699	86.1450	123.7699	44.13%
2016	88.5601	86.5428	96.6539	81.5389	85.8723	-1.98%
2015	89.6879	87.4743	96.0691	82.4385	87.6029	-1.48%

Market capitalization (or market value) is the most commonly used method

⁴ Data from Macrotrends.net, <https://www.macrotrends.net/stocks/charts/DEO/diageo/stock-price-history>

of measuring the size of a publicly traded company and is calculated by multiplying the current stock price by the number of shares outstanding. Diageo market cap as of January 21, 2025 is **\$66.08B**.⁵

Diageo operates in approximately 180 countries and is involved in producing, distilling, brewing, bottling, packaging as well as distributing spirits, wine and beer.

The company offers its products under globally recognized flagship brands, such as Smirnoff, Johnnie Walker, Captain Morgan, Baileys, Buchanan's, J&B, Tanqueray and Guinness. Among these, 14 brands ' Johnnie Walker, Smirnoff, Baileys, Crown Royal, Captain Morgan, Jose Cuervo, JeB, Buchanan's, Windsor, Ketel One vodka, Tanqueray, Bushmills and Guinness ' are classified as global strategic brands. The company operates through five regions: 'North America includes four operating units'. U.S. Spirits, Diageo-Guinness USA, Diageo Chateau & Estate Wines Co. and Diageo Canada. Europe comprises Great Britain, Ireland, Iberia, France, Germany, Benelux, Italy, Nordics, Greece, Switzerland, Austria, the Western European reserve brands, Diageo Guinness Continental Europe, European wines and the Western European operations of Global Travel.

Theory and methodology

In addition to profitability, bankruptcy risk analysis is also of direct interest to many stakeholders in making decisions based on the likelihood of bankruptcy of companies (Buzgurescu & Elena, 2020).

The question is whether the language used in the annual report accurately reflects the company's bankruptcy risks.

Lopatta et al. (2017) confirmed that the 10-K reports of bankrupt companies contained significantly more negative language than reports of healthy companies. Lohmann and Ohliger (2020) demonstrate that based on structural and linguistic factors and qualitative information in annual reports, it is possible to accurately distinguish companies that have gone bankrupt and those that are solvent but facing financial difficulties.

According to Cherry et al. (2023), economic stress caused by the COVID-19 pandemic can lead to unexpected changes in organizational performance. Therefore, the question of how the information disclosure practices of managers of these companies have changed during the COVID-19 epidemic has become contextually relevant.

Non and Ab Aziz (2023) posit that companies apply a variety of emotional tones when communicating with stakeholders. Most companies use negative emotions to express their concerns about how the COVID-19 pandemic has affected their business (Binh Le, Cong Nguyen, 2024). For the purposes of the methodology used in the article, we have identified three methods of application:

1. Analysis of key general financial indicators of the corporation based on consolidated annual data:

2. Corporate profitability assessment, for which we have identified the following coefficients:

- Return on equity: $\text{net profit/equity} \times 100$,

⁵ Data from Macrotrends.net <https://www.macrotrends.net/stocks/charts/DEO/diageo/market-cap>

- economic profitability: balance sheet profit/assets*100,
- Net return on assets: net profit/assets*100,
- Return on sales: Net profit/net sales revenue*100, Cost return: net profit / cost*100

3. Assessment of insolvency and the risk of bankruptcy of a corporation.

Research Methods

Various methods of assessing insolvency exist. For example in the period from 1969 to 1975, Tafler, (Baykina, 2008) having studied 92 organizations, 46 of which went bankrupt and 46 were financially stable, proposed the following model for predicting the potential risk of bankruptcy:

$$Z = 0,53 * X_1 + 0,13 * X_2 + 0,18 * X_3 + 0,16 * X_4, \quad (1)$$

Altman proposed the following five-factor model for joint-stock companies whose shares are listed on the financial market (Altman, et al., 1998).

$$Z = 1,2 * X_1 + 1,4 * X_2 + 3,3 * X_3 + 0,6 * X_4 + X_5, \quad (2)$$

In the article, we applied the method of assessing the risk of bankruptcy of organizations by R. Lis.

Lis proposed the following four-factor model for assessing the risk of bankruptcy of organizations (Melnikova, 2015).

$$L = 0.063 * K_1 + 0.092 * K_2 + 0.057 * K_3 + 0.0014 * K_4, \quad (3)$$

Where:

- K_1 – ը՝ current assets/ assets,
- K_2 – ը՝ profit/assets from sale,
- K_3 – ը՝ retained earnings/ assets,
- K_4 – ը՝ equity/ borrowed capital,

According to the model:

- If $L < 0.037$, the probability of bankruptcy of the organization is high.
- If $L > 0.037$, the probability of bankruptcy of the organization is low.

Results

1. Analysis of key general financial indicators of the corporation based on consolidated annual data:

EBITDA can be defined as earnings before interest, taxes, depreciation and amortization. Diageo 2024 annual EBITDA was \$6.494B, a 5.11% decline from 2023. In 2023 EBITDA was \$6.844B, a 1.82% decline from 2022 and in 2022 it was increase about 23.97% from 2021.

Table 2.

Alcoholic Beverages - Top Stocks⁶

Company name	Country	Market cap	Dividend Yield
Anheuser-Busch	Belgium	\$86,266	1.36%
Diageo	UK	\$66,082	4.22%
Heineken	Netherlands	\$38,502	1.60%
Constellation Brands Inc	US	\$33,310	2.19%
Ambev S.A	Brazil	\$28,042	3.86\$
Pernord Ricard SA	France	\$27,851	3.11%
Brown-Forman	US	\$16,208	2.64%

Revenue can be defined as the amount of money a company receives from its customers in exchange for the sales of goods or services. Revenue is the top line item on an income statement from which all costs and expenses are subtracted to arrive at net income.

Diageo annual revenue for 2024 was \$20.269B, a 1.39% decline from 2023. Revenue for 2023 was \$20.555B, a 0.06% decline from 2022. In 2022 was \$20.568B, a 20.02% increase from 2021.

Diageo total assets for 2024 were \$45.474B, a 1.32% increase from 2023. In 2023 assets were \$44.883B, a 7.66% decline from 2022 and 2022 were \$48.606B, a 13.02% increase from 2021⁷.

Total liabilities can be defined as the total value of all possible claims against the corporation. Diageo total liabilities for 2024 were \$33.404B, a 0.69% increase from 2023.

Total liabilities for 2023 were \$33.174B, a 7.7% decline from 2022 and for 2022 were \$35.942B, a 13.53% increase from 2021.

Table 3.

Diageo Annual Financial Results

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Annual Revenue (Millions of US \$)	16,685	17,042	15,561	15,283	16,384	16,651	14,817	17,137	20,568	20,555	20,269
Total Assets (Millions of US \$)	37,351	40,670	42,283	36,588	40,026	40,500	41,995	43,006	48,606	44,883	45,474
Total Liabilities (Millions of US \$)	25,006	26,081	27,175	21,333	24,249	27,357	31,354	31,658	35,942	33,174	33,404

⁶ Source: <https://www.macrotrends.net/stocks/industry/19/>

⁷ Source: <https://www.macrotrends.net/stocks/charts/DEO/diageo/total-assets>

2. Corporate profitability assessment, for which we have identified the following coefficients:

- Using Diageo’s data, we calculated the following corporate profitability ratios:
- Return on investment: net profit/equity,
 - Return on investment: net profit/assets,
 - ROS: net profit/net sales revenue:

Table 4.

Calculated values of profitability coefficients of Diageo

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	ave- rage
ROE	0.402	0.402	0.341	0.316	0.167	0.311	0.258	0.221	0.220	0.257	0.296	0.307	0.304	0.337	0.364	0.536	0.309
ROA	0.105	0.105	0.089	0.083	0.042	0.101	0.102	0.092	0.079	0.092	0.098	0.099	0.093	0.102	0.090	0.095	0.091
ROS	0.218	0.218	0.210	0.209	0.120	0.246	0.248	0.221	0.214	0.220	0.219	0.217	0.193	0.203	0.178	0.185	0.207

3. Assessment of insolvency and the risk of bankruptcy of a corporation.

Taking into account the results of the simulation assessment, we assessed the insolvency and bankruptcy risk of the corporation using the logical chain of the methodological sequence used in the article, the results of which are shown in the table below:

Table 5.

Results of the assessment of insolvency and bankruptcy risk of Diageo using the Lis’s model⁸

The name of the indicator	Results
1. (working capital / total capital (assets)) * 0.063	0,056
2. (profit from sales / total assets) *0.092	0,011
3. (retained earnings / total assets) *0.057	0,005
4. (equity/borrowed capital)* 0.001	0,0001
5. Z is the bankruptcy prediction coefficient	0,073
6. the probability of bankruptcy	0,073 > 0.037

Conclusion

Since the sale of alcoholic beverages is associated with certain regulatory issues consequently, financial management in organizations producing it and

⁸ The data required for the calculations of the Lis’s model were taken from the reports of the organizations under study.

working capital management within it have certain peculiarities (Matevosyan et. al, 2023).

There were three important aspects of Diageo's approach; audit work performed on individual business units, at shared service centres, and at the group level and for the company.

Scotch whisky represents 24% of Diageo's net sales as of 2022, and is therefore one of the most important aspects of their portfolio. Diageo owns 30 whisky distilleries in Scotland, including Lagavulin, Clynelish and Talisker, and control the production of 27.71% of Scotland's Scotch production capacity.

Pernod Ricard is their closest competitor and owns 13 distilleries producing 19.14% of Scotland's total capacity (GRIGORYAN, A., 2024).

Beverages analysis of the cash flow data of the alcoholic beverage companies listed and studied in Alcoholic Beverages – Top Stocks shows, there has been a tendency to hold on to free cash rather than invest it in profitable deals especially in the last five years. Essentially, alcoholic beverage companies show high caution in investment processes (Matevosyan, 2023).

As revealed by the analysis of the 2024 Diageo audit, the company continued to drive more standardisation in their audit work performed for individual business units and centralise more of their work in shared service centre locations (Diageo Annual Report, 2024).

From the results obtained using the bankruptcy risk assessment method by R. Liss, we can draw the following conclusion:

- A value above 0.037 was obtained from the bankruptcy limit point, which gives reason to assert that the SH-organization is not at risk of bankruptcy according to these results:

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