

Risk assessment of trade activity of retail companies in Bulgaria

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Abstract: In today's competitive and dynamic economic world, companies are forced to be more innovative in order to maintain their positions in the market and to create additional value for their users and stakeholders. Risk is inevitably presented in all business operations and risk assessment and management is of great importance for the efficiency of the enterprise's financial and economic activity. The retail industry and trade activity are constantly exposed to challenges coming from reforms in the sector, the digitalization and the ongoing impact of the Covid-19. One of the most famous methods of risk assessment is the method of Altman whose application is to be examined on the retail companies operating on the Bulgarian market.

Keywords: risk, retail, Altman, risk assessment

JEL: G0

1. INTRODUCTION

In today's competitive and dynamic economic world, companies are forced to be more innovative in order to maintain their positions in the market and to create additional value for their users and stakeholders. The company's risk assessment and its follow-up management should be a method accompanying every company activity, and its timely application is increasingly necessary in the dynamic economic situation. The methods and rules that are part of the company's risk management must be embedded in the corporate culture and, above all, they must be applied by the management at every level in the enterprise in order to be effective and protect the business unit from the occurrence of adverse events. In today's reality, the members of the management board often work in predetermined and established patterns and they fail to analyse, critically examine and evaluate the way the organization works and the need to implement an effective methodology for risk management in the company.

Timely risk management of the commercial activity in every company implies a stable financial situation that allows the company to timely fulfil its financial obligations. Undoubtedly, this provides the company with financial stability, good solvency and creditworthiness, high return on capital, return on assets and, under favourable conditions, sales growth. The results of the risk management of the commercial company are aimed at improving the management of the financial activity in general or making an optimal management decision for a financial operation or process. Risk management is a necessary method for the development of business plans for the development of the enterprise, the undertaking of investment projects or business evaluations.

For its part, risk is an inevitable part of the activity of any enterprise. Its structure evolves over time, so the methods of risk management must be updated and monitored, and above all the strategies for its timely assessment and hedging.

2. ALTMAN METHOD AS A RISK ASSESSMENT TOOL

In 1968, Altman developed a theory for predicting company bankruptcy, as according to him, the previous existing method by means of analysis based on indicators was insufficient and incomplete to carry out a complete analysis. In his seminal paper, he shows that a set of financial ratios, if considered in a multivariate discriminant analysis framework for predicting corporate bankruptcy, can improve their power of statistical significance. In addition, Altman identifies operating profitability (in the form of return on firm assets) among the key financial ratios of his model, arguing that firms with highly profitable operations are less likely to fail in their business activities.

Altman's most famous algorithm for predicting bankruptcy is formulated using several indicators establishing a benchmark Z-score that determines the probability of bankruptcy:

$$Z = 1.2 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5,$$

In which equation indicators are taken from the financial statements of the companies, namely:

- X_1 – working capital/total assets.
- X_2 – retained earnings/total assets.
- X_3 – earnings before interest and taxes/total assets.
- X_4 – market value of equity (of shares)/ book value of the total amount of debt.
- X_5 – net amount of sales revenue/total assets.
- Z – general index

According to Altman's Z-score equation if:

- a) $Z > 3$ bankruptcy event is extremely improbable to occur
- b) $2.7 < Z < 3$ it is necessary to pay attention to the company
- c) $1.8 < Z < 2.7$ there is a moderate chance of bankruptcy
- d) $Z < 1.8$ has a high probability of occurrence

The considered indicators themselves have their function by showing the liquid funds of the enterprise (X_1), the profitability of the assets, considered as cumulative profitability (X_2), return on assets (X_3), the ratio between debt and assets aimed at giving an idea of the expected occurrence of bankruptcy (X_4), managerial skills (X_5). (Georgiev, 2015)

The discovery of the method, started by Altman, turns into models for credit evaluation or rating, which determine the probability of default depending on the characteristics of the borrower and the considered credit transaction. There are several ways, but the most common is the use of multinomial models and in particular logit or probit models. These models are based on the fact that the phenomenon of default is dichotomous (either there is a default or there is not) and stochastic - impossible to know for sure whether there will be a default in the future or not. (Brealey, 2001)

3. SELECTED ENTERPRISES FOR RISK ASSESSMENT

In order to probate the Altman method in companies operating on the Bulgarian market six companies were selected and their financial data was analysed for the period 2018-2022.

On one hand, three of the selected companies are leaders on the Bulgarian market in the retail and wholesale food trade and are part of established leaders at the international level - "Lidl Bulgaria EOOD & Co" KD, "Kaufland Bulgaria EOOD & Co" KD, and "METRO CASH & Kerry Bulgaria" EOOD. On the other hand, the other three companies are operating only on the Bulgarian market and they provide information about the wholesale and retail trade of goods at the national level without being part of a global chain – those firms are "Shopping Online" ltd, "Pharmabion plus" ltd and "Eurocosmetics" ltd.

The company "Kaufland Bulgaria Bulgaria & Co" KD, engaged in retail and trade of consumer goods and others, has been present on the Bulgarian market since 2006. With over 6,000 employees, the company is one of the leading retailers of food products in Bulgaria. As of February 2022, Kaufland has 61 stores. More than 60% of the producers the company works with are Bulgarian. In addition, the company partners with manufacturers and suppliers from 26 Bulgarian regions, with the share of food items from Bulgarian suppliers being 87%.

Table 1: Accounting data of the company "Kaufland Bulgaria EOOD END KO" KD for the period 2018-2022

Kaufland	2018	2019	2020	2021	2022
Capital stock	724157	655703	597028	597028	597028
Equity	778217000	739506000	768505000	877370000	865141000
Sales revenue	1578408000	1662174000	1757838000	1891135000	2217726000
Total assets	1412907000	1430935000	1410061000	1047086000	1134915000
Obligations	634690000	687391000	638874000	579448000	767137000
Earnings before taxes and fees	81604000	88426000	98301000	132381000	135143000
Depreciation expenses	48685000	51338000	52985000	49295000	50823000
Earnings before taxes, interest and depreciation.	130289000	139764000	151286000	181676000	270286000
Profit	72618000	78639000	87674000	118332000	120643000
Working capital	39369000	-90421000	-136655000	-131875000	-126942000

"Lidl Bulgaria EOOD & CO" KD, part of the German group "Schwarz Gruppe", with the activity of retail trade of goods for general consumption, which are admitted to the public market, among which industrial and food goods and other activities is the largest chain of grocery stores in Europe and is present at 31 countries. In Bulgaria, Lidl started its activity

in 2010 and by 2022 the company has 124 stores in 54 cities and over 4,000 employees. In 2022 the company has generated the highest revenue from the sale of its own brands such as food products "Pikok", "Duano", baby food and goods "Lupilu", textiles "Esmara", cleaning products "Cien", "W5" and others.

Table 2: Accounting data of the company "Lidl Bulgaria EOOD & CO" KD for the period 2018-2022

Lidl	2018	2019	2020	2021	2022
Capital stock	775817	775817	775817	707363	707363
Equity	435222000	476473000	542166000	547881000	617641000
Sales revenue	944082000	1163542000	1354032000	1568917000	1999049000
Total assets	913575000	966803000	1112547000	1081411000	1330483000
Obligations	476347000	488460000	568245000	531143000	709768000
Earnings before taxes and fees	33158000	46267000	73596000	83218000	100125000
Depreciation expenses	31208000	35991000	38347000	40901000	44760000
Earnings before taxes, interest and depreciation.	64366000	82258000	111943000	124119000	144885000
Profit	29364000	41251000	65693000	74169000	89318000
Working capital	-164691000	-109777000	-51858000	-166982000	-149227000

The company "Metro Cash and Carry Bulgaria" Ltd, part of the German group "Metro Group" with the activity of wholesale and retail trade, import and export of consumer goods of all kinds and others, started its activity on the Bulgarian market in 1999 with two stores in Sofia and Plovdiv. In 2022 the company has 11 stores in 9 cities in the country and offers a wide assortment of goods also through its own brands such as "Aro", "Line fine", "Metro professional" and others.

Pharmabion Plus Ltd. was registered in 2009 with address and registered office in the city of Sofia and activity according to the commercial register: wholesale of medicines, medicinal products, sanitary and medical consumables, import and export of medicines, medicinal products, sanitary and medical supplies consumables and others. During the considered period 2018-2022 the company carries out retail and wholesale trade in nutritional supplements, being the official distributor of the products of the company "Espara" Austria. The company has its own store located on Vitosha Blvd., Sofia. The company's products can be found across the country in pharmacies, drugstores and others.

Table 3: Accounting data of the company "METRO Cash and Carry Bulgaria" Ltd for the period 2018-2022

Metro Cash and Carry	2018	2019	2020	2021	2022
Capital stock	74500	74500	74500	74500	74500
Equity	92900000	93097000	110857000	128984000	96813000
Sales revenue	756698000	780335000	765220000	846108000	1012745000
Total assets	257348000	269276000	252156000	258112000	260338000
Obligations	95442000	98284000	90871000	117743000	152210000
Earnings before taxes and fees	20001000	20326000	19951000	20164000	23893000
Depreciation expenses	10539000	11993000	11285000	11020000	11025000
Earnings before taxes, interest and depreciation.	30540000	32319000	31236000	31184000	34918000
Profit:	17956000	18257000	17887000	18064000	21487000
Working capital	33883000	-29512000	-5114000	16667000	-18441000

Table 4: Accounting data of the company "PHARMABION PLUS" EOOD for the period 2018-2022

Pharmabion Plus	2018	2019	2020	2021	2022
Capital stock	5000	5000	5000	5000	5000
Equity	43492.39	60754.44	90257.44	89677.55	106895.75
Sales revenue	240943.92	251352.44	215554.54	228729.61	222278.76
Total assets	65617.02	68928.22	98691.97	115582.45	125392.84
Obligations	22124.63	8173.78	8434.53	25904.9	18497.09
Earnings before taxes and fees	21802.52	40291.17	32781.31	21577.89	19131.33
Depreciation expenses	81.67	0	0	0	0
Earnings before taxes, interest and depreciation.	21884.19	40291.17	32781.31	21577.89	19131.33
Profit	19622.3	36262.05	29503	19420.11	17218.2
Working capital	43492.39	60754.44	90257.44	89677.55	106895.75

The company "Eurocosmetics" Ltd. was registered in 2008 with the address and registration of management in the city of Sofia and activity according to the commercial register: purchase of goods or other items for the purpose of resale in the original processed or processed form, production of goods for the purpose of sale and others. During the considered period 2018-2022 the company carries out retail and wholesale trade in household goods, sports and cosmetic goods. The company has a main warehouse located in the Iliyantsi shopping area, Sofia, and a store designed for the direct sale of items located in the same stock market. In addition, the company also has a warehouse in Trakia shopping

center, Plovdiv. The company imports its goods from China and Turkey and has customers from various cities in Bulgaria, using its own trucks with which it delivers the goods. The company is a distributor of the offered items and has a built-up and established network of customers, which it supplies monthly.

Table 5: Accounting data of the company "EUROKOSMETIKA" ltd for the period 2018-2022

Eurocosmetics	2018	2019	2020	2021	2022
Capital stock	5000	5000	5000	5000	5000
Equity	234626.42	252782.26	273952.69	300238.32	310219.78
Sales revenue	1098959.01	827852.91	855554.91	1151924.54	1091495.39
Total assets	1081792.01	975111.6	961452.21	1015240.86	1045792.77
Obligations	847165.59	722329.34	687499.52	715002.54	735572.98
Earnings before taxes and fees	15561.83	20183.63	23889.52	29246.56	11095.31
Depreciation expenses	8639.3	2454.23	5157.18	5221.85	7594.38
Earnings before taxes, interest and depreciation.	24201.13	22637.86	29046.7	34468.41	18689.69
Ultimate profit	13903.17	18155.84	21170.43	26285.63	9981.47
Working capital	209617.09	230227.16	252981.82	268502.04	283209.34

The company "Shopping Online" ltd. was registered in 2011 with the address of registration and management in the city of Sofia and activity according to the commercial register: import and export of goods, construction and maintenance of gardens and swimming pools, purchase and sale of goods and other products for the purpose of their resale in original, modified or processed form and others. During the considered period 2018-2022 the company carries out entirely online trade with an assortment of leisure goods such as swimming pools, aqua fitness equipment, garden jacuzzis, paddle boards, surfboards, barbecues, garden accessories and others. "Shopping Online" ltd. imports its goods from Spain, and for carrying out its activities the company has a rented warehouse. The company's goods can be purchased not only on the company's direct website, but also through the company "EMAG INTERNATIONAL" ltd. The firm also has a second activity - trade in cosmetic products, as the goods are imported from Hungary and Greece.

Table 6: Accounting data of the company "SHOPPING ONLINE" ltd for the period 2018-2022

Shopping online	2018	2019	2020	2021	2022
Capital stock	1000	1000	1000	1000	1000
Equity	25917.31	33161.54	65757.63	132428.93	210452.48
Sales revenue	80589.12	97400.32	233095.46	525278.23	586464.57
Total assets	123939.54	114633.71	164218.56	259969.76	350112.65
Obligations	98022.23	81472.12	98469.93	127540.83	139660.17
Earnings before taxes and fees	10297.29	8049.15	36217.87	96301.44	120001.77
Depreciation expenses	97.5	510.56	875	762.5	975
Earnings before taxes, interest and depreciation.	10394.79	8559.71	37092.87	97063.94	120976.77
Profit	9265.23	7244.23	32425	86671.3	107999.15
Working capital	25844.25	31849.04	65329.13	127093.68	206092.23

4. RISK ASSESSMENT THROUGH THE ALTMAN METHOD

With the application of the Altman method of the analysed companies several observations were made for each company. First of all, "Kaufland" shows stable positive values for X1 (Working capital / Total assets), which is a sign of good management of short-term financial resources. X2 (Retained Earnings / Total Assets) is predominantly positive, indicating sustained accumulation of earnings. The indicator X3 (Earnings before interest and taxes / Total assets) is variable, but in most cases positive, which points to stable profitability. X4 (Equity Value / Total Liabilities) is stable and positive, indicating a good ratio between equity value and liabilities. X5 (Sales / Total Assets) is consistently high, indicating strong sales performance.

Kaufland's overall financial picture is positive with good capital management and strong sales. The company has demonstrated stability and potential for sustainable growth.

Table 7: Kaufland performance results based on the Altman method

Kaufland	X1	X2	X3	X4	X5
2018	0.028	0.051	0.058	1.226	1.117
2019	-0.063	0.055	0.062	1.076	1.162
2020	-0.097	0.062	0.070	1.203	1.247
2021	-0.126	0.113	0.126	1.514	1.806
2022	-0.112	0.106	0.119	1.128	1.954

The second analysed company, Lidl shows positive values for X1 (Working Capital / Total Assets) most of the years, which is a good sign for the management of short-term assets and liabilities. X2 (Retained Earnings / Total Assets) is consistently positive,

indicating a healthy financial position with good earnings accumulation. The indicator X3 (Earnings before interest and taxes / Total assets) is positive, highlighting strong profitability. X4 (Value of Equity / Total Liabilities) is stable and positive, indicating a sound financial position regarding the value of equity and liabilities. X5 (Sales / Total Assets) is high, reflecting excellent sales performance.

Lidl shows strong financial performance, indicating good management and potential for growth. The company is well positioned for future expansion and sustainability.

Table 8: Lidl performance results based on the Altman method

Lidl	X1	X2	X3	X4	X5
2018	-0.180	0.032	0.036	0.914	1.033
2019	-0.114	0.043	0.048	0.975	1.203
2020	-0.047	0.059	0.066	0.954	1.217
2021	-0.154	0.069	0.077	1.032	1.451
2022	-0.112	0.067	0.075	0.870	1.502

Thirdly, "Metro" shows variability in the indicator X1 (Working capital / Total assets), with some years of negative values, which may point to periodic financial challenges. X2 (Retained earnings / Total assets) is variable, with some negative values, indicating volatility in earnings accumulation. The X3 indicator (Earnings before interest and taxes / Total assets) shows mixed results, pointing to variable profitability. X4 (Share Value / Total Liabilities) is positive, which is a good sign of the company's stability regarding liabilities. X5 (Sales / Total Assets) is variable but usually high, indicating good sales performance.

Despite some financial fluctuations, Metro has demonstrated strong sales and adequate debt management. It is important for the company to focus on stabilizing X1 and X2 indicators to improve overall financial health.

Table 9: Metro Cash and carry performance results based on the Altman method

Metro Cash and Carry	X1	X2	X3	X4	X5
2018	0.132	0.070	0.078	0.973	2.940
2019	-0.110	0.068	0.075	0.947	2.898
2020	-0.020	0.071	0.079	1.220	3.035
2021	0.065	0.070	0.078	1.095	3.278
2022	-0.071	0.083	0.092	0.636	3.890

Further on, "Pharmabion Plus" shows consistently high values for X1 (Working Capital / Total Assets), which highlights the good management of short-term assets and liabilities. X2 (Retained Earnings / Total Assets) is variable, with some years of significant increase, showing variation in retained earnings and loss control. The X3 ratio (Earnings

before interest and taxes / Total assets) is also consistently high, reflecting good profitability. The extremely high values of X4 (Value of Shares / Total Liabilities) in 2019 and 2020 speak of strong financial stability, despite the decline in subsequent years. X5 (Sales / Total Assets) shows a decline over the years, which may signal declining sales performance.

The overall picture of Pharmabion Plus is one of stability in short-term finances and profitability, but with some challenges in maintaining sales. A decline in sales may require strategic changes to improve market performance.

Table 10: Pharmabion Plus performance results based on the Altman method

Pharmabion Plus	X1	X2	X3	X4	X5
2018	0.663	0.299	0.332	1,966	3.672
2019	0.881	0.526	0.585	7.433	3.647
2020	0.915	0.299	0.332	10.701	2.184
2021	0.776	0.168	0.187	3.462	1.979
2022	0.852	0.137	0.153	5.779	1.773

The next analysed company, "Eurocosmetics" shows variability in the indicator X1 (Working capital / Total assets), with some years of positive values, which suggests periodic stability in the management of short-term assets and liabilities. The indicator X2 (Retained Earnings / Total Assets) is mostly positive, indicating consistency in the accumulation of earnings relative to assets. X3 (Earnings before interest and taxes / Total assets) is mostly positive, pointing to good profitability of the company. X4 (Equity Value / Total Liabilities) is variable but usually positive, indicating an adequate ratio between equity value and liabilities. X5 (Sales / Total Assets) has shown strong sales performance, especially in recent years.

"Eurocosmetics" demonstrates stability and potential for growth, despite some fluctuations in financial indicators. Despite some fluctuations, the company shows good profitability and asset efficiency. Positive trends in X2 and X3 indicators are encouraging for the company's long-term financial health.

Table 11: Eurocosmetics performance results based on the Altman method

Eurocosmetics	X1	X2	X3	X4	X5
2018	0.194	0.013	0.014	0.277	1.016
2019	0.236	0.019	0.021	0.350	0.849
2020	0.263	0.022	0.025	0.398	0.890
2021	0.264	0.026	0.029	0.420	1.135
2022	0.271	0.010	0.011	0.422	1.044

Last but not least, "Shopping Online" has shown a consistent increase in X1 (Working Capital / Total Assets) over the years, highlighting an improvement in the management of short-term assets and liabilities. X2 (Retained Earnings / Total Assets) is also steadily increasing, which is a good sign of increasing retained earnings and controlling losses. The indicator X3 (Earnings before interest and taxes / Total assets) is on an upward trend, showing a constant improvement in profitability. The significant growth of X4 (Equity Value / Total Liabilities) in recent years is an excellent sign of the company's financial stability. The X5 indicator (Sales / Total Assets) is also increasing, which speaks of improving sales performance.

"Shopping Online" demonstrated significant improvement in all financial aspects, with a particular emphasis on growth and stability. The company shows a successful strategy to increase profitability and improve its financial position. Maintaining this rate of growth and stability will be key to the future success of Shopping Online.

Table 12: Shopping online performance results based on the Altman method

Shopping online	X1	X2	X3	X4	X5
2018	0.209	0.075	0.083	0.264	0.650
2019	0.278	0.063	0.070	0.407	0.850
2020	0.398	0.197	0.221	0.668	1.419
2021	0.489	0.333	0.370	1.038	2.021
2022	0.589	0.308	0.343	1.507	1.675

5. CONCLUSION

With the development of economic globalisation, enterprises face dual competition and challenges both at the national and international level. To remain competitive, businesses must be able to quickly adapt to changing economic environments and be able to scale operations to increase their market share and maximize enterprise value. Risk is an invariable part that is present in all organisations, no matter how well they are managed. Risk management identifies the necessity and efficiency of the enterprise's financial and economic activity. The management of the company must systematically control and analyze the risk of the commercial company for the successful management of the business unit.

Trade is a dynamic industry that is entering a new information age and accompanying reforms becoming a fundamental force that drives the economic development of the entire nation. In addition, due to the improvement of technologies, the formation of commercial alliances and the development of international relations, international trade is becoming an increasingly significant factor and an inevitable part of the activity of commercial companies. With the development of the international economy, the spread of the global financial crisis continues to accelerate, as the commercial industry is faced with an increasingly complex economic environment in which competition increases and the occurrence of different types

of risk threatening the company's activity, such as the financial risk that often is the basis for declaring a given company in insolvency and bankruptcy

The existence of commercial companies in the conditions of a market economy requires them to continuously improve their activities in order to be competitive and able to provide value to their consumers. This undoubtedly requires adequacy to the dynamic changes and innovations in the industry, current and changing regulations and their alignment with the new justifications. In this accelerated process, the risk management of the trading company takes an active place.

As the economic situation changes, companies are forced to be more innovative in order to maintain their positions in the market and create additional value for their consumers. Commercial companies must implement methods of managing and dealing with various types of risk in order to maintain their positions, attract additional investments and operate successfully. The aim of the present study is to test Altman's method on bankrupt companies. In conclusion, the method shows a clear presence of the risk of bankruptcy in all the studied periods, which gives rise to the need for a deeper analysis and comparability of commercial companies declared bankrupt for the timely identification of the risk and its management.

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