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## WAYS TO ELIMINATE THE ONSET OF BANKRUPTCY AT THE ENTERPRISE OF “SILPO-FOOD” LTD

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The article studies the concept of “bankruptcy” and provides the author’s own definition of this economic concept. The author analyzes the number of Ukrainian enterprises in 2014–2023, including Silpo-Food LLC, identifies the main areas of activity, the number of supermarkets in 2019–2022, the company’s response to military operations in Ukraine, and analyzes the dynamics of profit at the enterprise. According to the profit analysis, the expediency of assessing the probability of bankruptcy based on discriminant analysis was determined. A comparative analysis of the Altman, Matviychuk, Tereshchenko, and Taffler models was carried out and the probability of bankruptcy at the enterprise Silpo-Food LLC was estimated on their basis. The article also identifies the strengths and weaknesses of the enterprise, as well as the problems and threats it faces. The author suggests ways to prevent bankruptcy, including opening a cafe at a supermarket, cooperation with more Ukrainian farmers, implementation of an environmental initiative in supermarkets, and discounts for long waiting times at the checkout.

## ШЛЯХИ УСУНЕННЯ НАСТАННЯ БАНКРУТСТВА НА ПІДПРИЄМСТВІ ТОВ «СІЛЬПО-ФУД»

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### Ключові слова:

банкрутство, криза,  
шляхи усунення, аналіз,  
менеджмент, маркетинг

У статті досліджено поняття «банкрутство» та надано власне визначення даної економічного поняття. Було проаналізовано кількість українських підприємств за 2014–2023 рр., ТОВ «Сільпо-Фуд», визначено основні напрямки діяльності, кількість супермаркетів протягом 2019–2022 рр., реакцію підприємства на військові дії в Україні, проаналізовано динаміку прибутку на підприємстві. Згідно аналізу прибутку було визначено доцільність оцінки ймовірності банкрутства на основі дискримінантного аналізу. Було зроблено порівняльний аналіз моделей Альтмана, Матвійчука, Терещенка і Тафлера та здійснено на основі них оцінки ймовірності банкрутства на підприємстві ТОВ «Сільпо-Фуд». Також було визначено сильні та слабкі сторони підприємства, а також проблеми та загрози з якими воно стикається. Запропоновано шляхи попередження настання банкрутства, серед яких відкриття кафе при супермаркеті, співпраця з більшою кількістю українських фермерів, впровадження екологічної ініціативи в супермаркетах та знижки при довгому очікуванні на касі.

### Problem statement

Ukrainian enterprises are currently developing quite actively and trying to establish their work on a par with European enterprises in order to attract more investment and expand their work not only within Ukraine but also abroad.

However, in 2022, a large number of businesses failed to withstand the crisis caused by Russia’s invasion of Ukraine and were permanently closed. Businesses that continue to

operate are trying to adapt to the current environment and avoid being in crisis.

Therefore, the development of ways to prevent bankruptcy at an enterprise is quite relevant in today’s environment.

### Recent research and publications analysis

Over the past two centuries, a large number of scholars have studied the concept of “bankruptcy”, among them are T.A. Babayeva [2], S.V. Breus [2], S.M. Horska [3],

D.O. Horska [3], M.P. Khokhlov [4], M.V. Podymailo [4], V.I. Rudyka [5], Y.M. Velykyi [5], O.D. Zioma [5], A.V. Cherep [6; 7], V.Z. Buhai [6; 7], A.V. Horbunova [6; 7] who have formed their own approaches to the definition and reflected it in their own scientific works.

In order to determine the probability of bankruptcy, in the 20th century, the scientist Edward Altman developed an approach based on integral indicators that allowed to assess the state of the enterprise. Among the Ukrainian scientists who developed similar models are M. Matviychuk and O. Tereshchenko.

**The purpose of the article**

The article is aimed at developing ways to eliminate the onset of bankruptcy at the enterprise “Silpo-Food” LLC.

**Presentation of the main material**

In Ukraine, the number of enterprises that have been liquidated or are on the verge of bankruptcy is growing rapidly due to the unstable political and economic situation. Therefore, it is important for each company to identify the indicators of a crisis at the enterprise in time and avoid bankruptcy.

There are many different approaches to the definition of “bankruptcy” (table 1).

Analyzing the definitions from Table 1, we can conclude that bankruptcy is a state of an enterprise in which the debtor cannot fulfill its financial obligations to creditors and overcome financial difficulties arising from a deep financial crisis, except through liquidation procedures.

Ukrainian enterprises are currently operating in an uncertain and unstable economic environment, the coronavirus crisis and Russia’s military aggression against Ukraine have led to the closure of enterprises and the emergence of a crisis in most of them (fig. 1).

Analyzing Figure 1, it should be noted that the number of Ukrainian enterprises during the study period was the highest in 2015 and amounted to 1974318, but the lowest was in 2022, which was caused by Russia’s military aggression against Ukraine, many enterprises were destroyed, occupied or closed because the owners left the country. In 2023, the number of businesses increased, but only slightly.

Therefore, assessing the likelihood of bankruptcy and making timely decisions to eliminate this situation is quite

Table – 1 Approaches to the definition of “bankruptcy”

Author	Definition
Code of Ukraine on Bankruptcy Procedures	The inability of the debtor to restore its solvency through the rehabilitation and restructuring procedure and to repay the monetary claims of creditors established in accordance with the procedure established by this Code other than through the application of the liquidation procedure or the procedure for repayment of debts of the debtor, recognized by the economic court
Khokhlov M.P., Podymailo M.V.	bankruptcy is the inability of the debtor to restore its solvency and repay the established monetary claims of creditors
Rudyka V.I., Velykyi Y.M., Zioma O.D.	Bankruptcy is the absolute insolvency of the debtor, which is the result of a deep financial crisis, as a result of which the company cannot satisfy the claims of its creditors
Breus S.V., Babaeva T.A.	Bankruptcy is a process in which an individual or an organization unable to pay its creditors, by a court decision, the debtor's property is distributed among creditors in accordance with the statutory order of payment of debts to creditors, such as taxes and wages to employees of the bankrupt organization
Gorska S.M., Gorska D.O.	bankruptcy is a crisis financial condition of an enterprise in which it has no liquid assets to pay off its obligations to creditors and the budget, is unable to restore its solvency through rehabilitation and restructuring procedures, or to pay off creditors' monetary claims other than through the use of liquidation procedures

Source: compiled by the author on the basis of [1–5]

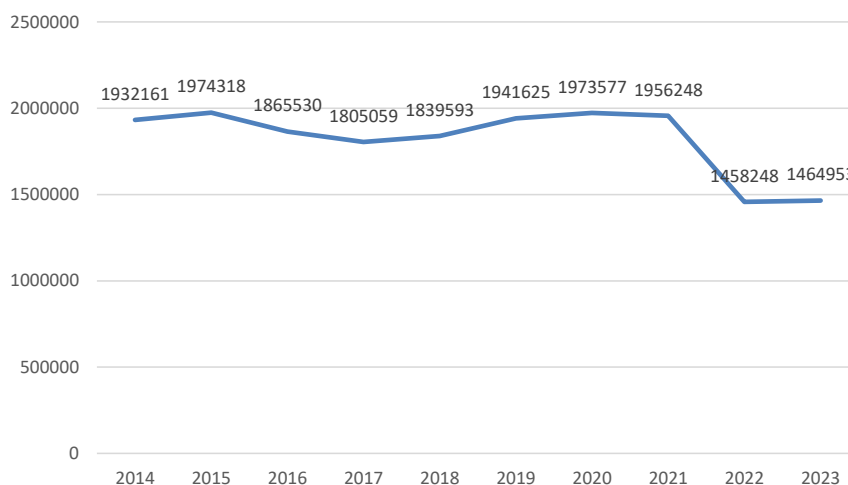


Fig. 1 – Number of enterprises in Ukraine in 2014–2023.

Source: compiled by the author based on [8]

important for each enterprise, in this paper we will consider various methods of assessing the likelihood of bankruptcy, including innovative methods, using the example of Silpo-Food LLC.

Silpo-Food LLC is one of the largest food supermarket chains in Ukraine, which is the flagship business of Fozzy group. The first store was opened in 1998, and today more than 300 stores operate throughout the country. The Company is controlled by PJSC “Retail Capital” Closed Non-Diversified Venture Corporate Investment Fund.

The Group’s principal activity is 47.11 wholesale and retail trade in non-specialized stores mainly in food, beverages and tobacco products, in addition, the company is engaged in its own production of products: bakery products, confectionery, smoked meat and fish, etc [9].

Analyzing fig. 2, in 2017–2022, the number of supermarkets increased from 235 to 333 and the total retail space from 339.8 to 484.2. In 2022, the number of supermarkets decreased by 28, and the total retail space decreased by 56.2, due to Russia’s military aggression against Ukraine.

The chain also includes 4 LE SILPO delicatessens with a premium range of food and non-food products and 4 OffTop stores specializing in non-food products. A total of 81 supermarkets were closed during the hostilities, of which 49 have been reopened as of early 2023.

Due to a significant decrease in the number of enterprises, Silpo-Food LLC loses a significant part of its income, so it is advisable to analyze the dynamics of changes in the company’s profit during 2019–2022.

Analyzing the dynamics of profits according to fig. 3, the company made a profit in 2019, after which the

company made a loss for 3 years, although in 2021 the company significantly reduced the amount of loss, 2022 turned out to be quite difficult for the company, which led to a significant loss of UAH 7366923 million.

Therefore, it is advisable to estimate the probability of bankruptcy of Silpo-Food LLC using the Altman, Tereshchenko, Matviychuk, and Taffler models.

The Altman and Taffler models are foreign models that were created based on the experience of foreign enterprises in the last century. The Tereshchenko and Matviychuk models are Ukrainian models that were developed specifically for Ukrainian enterprises, but the Matviychuk model was developed more with a focus on banking enterprises.

Analyzing table 2, it is worth noting that the Tereshchenko model is the most suitable for assessing the probability of bankruptcy of Silpo-Food LLC, as it was based on international practice and took into account the specifics of Ukrainian enterprises. However, other models are also quite accurate and convenient, so all four models should be considered for a more accurate assessment of the probability of bankruptcy.

Based on the values of the integral indicator, it can be concluded that the probability of bankruptcy of an enterprise is low throughout the entire period under study. Thus, according to the analysis, the company has a low probability of bankruptcy in 2019–2022.

According to table 4, in 2019–2022, the company was not threatened with bankruptcy, but in 2022, the financial balance of the company is disturbed, which may be due to the unstable economic situation caused by the Russian invasion of Ukraine.

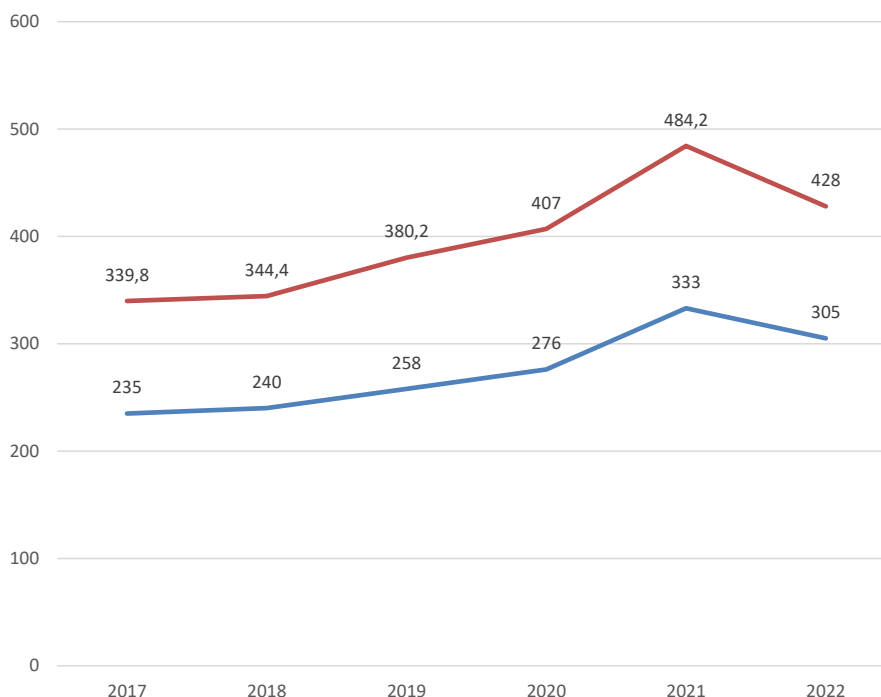


Fig. 2 – Number of supermarkets of Silpo-Food LLC in 2017–2022.

Source: compiled by the author based on [9]

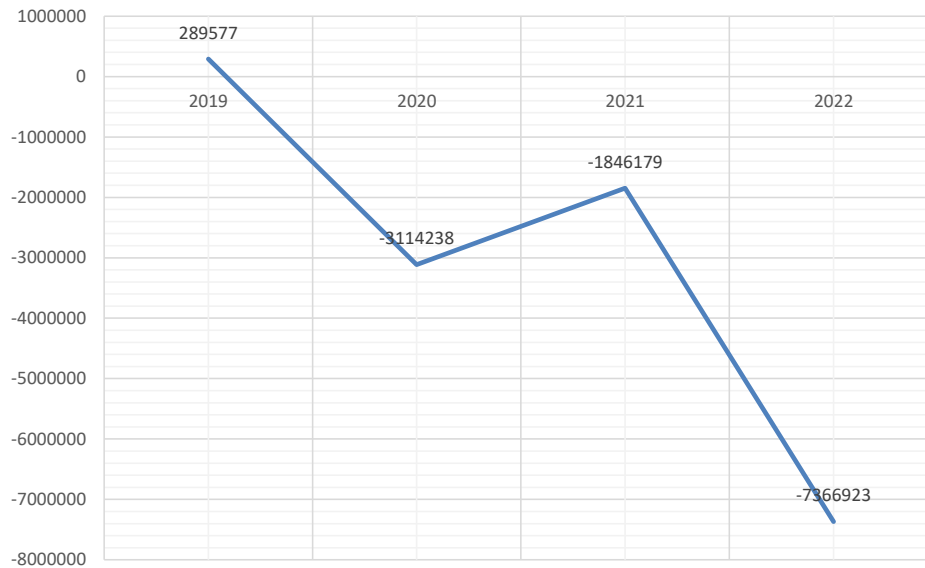


Fig. 3 – Profit dynamics of Silpo-Food LLC in 2019–2022.

Source: compiled on the basis of Annex B

Table 2 – Comparative characteristics of bankruptcy probability models

Model	Calculation formula	Advantages	Disadvantages
The five-factor model of E. Altman	$1,2X_1+1,4X_2+3,3X_3+0,6X_4+0,999X_5$ , where $X_1$ is the ratio of equity working capital to total assets; $X_2$ is the ratio of retained earnings to total assets; $X_3$ is the ratio of earnings before interest to total assets; $X_4$ is the ratio of equity to liabilities; $X_5$ is the ratio of net income to total assets.	simplicity of calculations; accuracy and quality of results; availability of source data; forecasting accuracy of 95%	The Western economy is different from the Ukrainian one. The model's bias
Tereshchenko O.	$1,5X_1+0,08X_2+10X_3+5X_4+0,3X_5+0,1X_6$ , where $X_1$ is the ratio of cash receipts to liabilities; $X_2$ is the ratio of the balance sheet currency to liabilities; $X_3$ is the ratio of net profit to average annual assets; $X_4$ is the ratio of profit to revenue; $X_5$ is the ratio of inventory to revenue; $x_6$ is the ratio of revenue to fixed assets.	convenience; when using domestic statistical data, modern international practice is taken into account; consideration of the company's industry specifics	requires additional analysis of financial stability indicators
Taffler R.	$0,53X_1+0,13X_2+0,18X_3+0,16X_4$ , where $X_1$ – operating profit/total assets; $X_2$ – current assets/total assets; $X_3$ – short-term liabilities/total assets; $X_4$ – net income (revenue) from sales/total assets.	Simplified calculations and high accuracy of bankruptcy probability forecasting.	Designed for joint-stock companies whose shares are actively traded on the stock market
A. Matviychuk	$0,033X_1+0,268X_2+0,045X_3-0,018X_4-0,004X_5-0,015X_6+0,702X_7$ , where $X_1$ – current assets / non-current assets; $X_2$ – net sales revenue / current liabilities; $X_3$ – net sales revenue / equity; $X_4$ – balance sheet / net sales revenue; $X_5$ – (current assets - current liabilities) / current assets; $X_6$ – amount of liabilities / balance sheet; $X_7$ – equity / amount of liabilities.	Based on the factors influencing the financial condition of Ukrainian bankrupt companies	A situation of low values of some indicators and high values of others compared to the normative values

Source: compiled on the basis of [10- 13]

Table 3 – Analysis of the probability of bankruptcy of the enterprise according to the five-factor model of E. Altman for 2019–2022

Indicators	Formula for calculation	2019	2020	2021	2022
$X_1$	$(\phi.1,p.1195-p.1695)/\phi.1 ,p.1300$	-0.13	-0.14	-0.34	-0.46
$X_2$	$\phi.2 p 2350(2355)/\phi.1 ,p.1300$	0.01	-0.10	-0.05	-0.22
$X_3$	$\phi.2 p 2290(2295)/\phi.1 ,p.1300$	0.01	-0.10	0.05	0.22
$X_4$	$\phi.1 p 1495/(\phi.1 ,p.1595+ p.1695)$	0.07	-0.04	-0.07	-0.23
$X_5$	$\phi.2 p 2000/\phi.1 ,p.1300$	2.18	2.06	1.88	2.06
Z (integral indicator of the level of bankruptcy threat)	$1,2X_1+1,4X_2+3,3X_3+0,6X_4+0,999X_5$	2.10	1.38	1.53	1.78
Probability of bankruptcy		High	High	High	High

Source: compiled based on [9]

Table 4 – Analysis of the probability of enterprise bankruptcy according to Tereshchenko's model for 2019–2022

	Calculation method	2019	2020	2021	2022
x1	p.2000(φ.2)/p.1695(φ.1)	3.52	3.27	2.59	2.59
x2	p.1900(φ.1)/p.1695(φ.1)	1.62	1.59	1.38	1.25
x3	p.2350(φ.2)/p.1900(φ.1)	0.01	-0.10	-0.05	-0.22
x4	p.2350(φ.2)/p.2000(φ.2)	0.00	-0.05	-0.03	-0.11
x5	p.1100(φ.1)/p.2000(φ.2)	0.08	0.09	0.09	0.09
x6	p.2000(φ.2)/p.1900(φ.1)	2.18	2.06	1.88	2.06
Z (integral indicator of the level of bankruptcy threat)	1,5X1+0,08X2+10X3+5X4+0,3X5+0,1X6	5.77	3.99	3.61	1.52
Probability of bankruptcy		No threat of bankruptcy	No threat of bankruptcy	No threat of bankruptcy	financial the equilibrium is disturbed, in case of transition to crisis management management, bankruptcy is not threatened

Source: compiled on the basis of [9]

The integral indicator of the Taffler model indicates a low probability of enterprise bankruptcy over the past four years.

According to Table 6, which examines the probability of bankruptcy of Silpo-Food LLC, the company had a satisfactory financial condition only in 2019, after which there was a threat of a financial crisis.

Therefore, using different models for assessing the probability of bankruptcy, we can conclude that the probability of bankruptcy at Silpo-Food LLC, according to the Matviychuk and Altman models, is high, but the Taffler and Tereshchenko models indicate that bankruptcy was not threatened during 2019–2021, but in 2022 there was a possibility of bankruptcy.

In order to avoid a crisis at Silpo-Food LLC, it is advisable to improve its anti-crisis strategy.

Since the company is not currently in a crisis, it is necessary to use such tools as monitoring; diagnostics; early detection and response system; discriminant analysis, expert evaluation, SWOT analysis; forecasting and strategic planning to prevent it.

The results of the discriminant analysis are presented above, and in this paper, in order to identify weaknesses and threats to Silpo-Food LLC, we conducted a SWOT analysis (table 7).

According to table 7, Silpo-Food LLC has a great potential for growth and expansion in the market due to the

constant increase in consumer demand, the development of the online segment, and the conclusion of strategic partnerships. However, it also faces a large number of competitors and other external threats. The company's internal environment has its advantages, such as a well-known brand, an extensive network of stores, and high quality products. However, the presence of a loss at the enterprise can lead the company to a crisis.

According to table 7, Silpo-Food LLC needs to develop a strategy that can respond to unforeseen situations. One of such unforeseen situations was a blackout caused by the shelling of Ukrainian critical infrastructure by Russian troops, when the company's management decided to urgently purchase generators, and to increase profits, the store shelves were stocked with relevant goods, such as candles, flashlights, matches, burners, etc. Therefore, the introduction of risk management helped to ensure the reliable operation of the company during times of crisis.

Also, to increase profitability, the company should expand the range of Ukrainian craft products. The company already has several collaborations with Ukrainian farmers, but we believe it should be expanded to include Ukrainian fruits and vegetables, craft cheeses, fish from Ukrainian ponds and microgreens on the supermarket shelves.

Silpo-Food LLC is quite an innovative company; for several years now, supermarkets have been operating cash registers and opening themed supermarkets, but to increase

Table 5 – Analysis of the probability of enterprise bankruptcy according to the Taffler model for 2019–2022

	Calculation method	2019	2020	2021	2022
x1(working capital/total assets)	p.2190/p.1695	0.09	0.01	0.01	0.04
x2(operating profit/total assets)	p.1195/(p.1595+p.1695)	0.52	0.47	0.36	0.26
x3(retained earnings/total assets)	p.1695/p.1900	0.62	0.63	0.73	0.80
x4(equity/debt)	p.2000/(p.1300)	2.18	2.06	1.88	2.06
Z (integral indicator of the level of bankruptcy threat)	0,53X1+0,13X2+0,18X3+0,16X4	0.58	0.51	0.49	0.53
Probability of bankruptcy		The probability of bankruptcy is low	The probability of bankruptcy is low	The probability of bankruptcy is low	The probability of bankruptcy is low

Source: compiled based on [9]

Table 6 – Analysis of the probability of enterprise bankruptcy according to the model of A. Matviychuk (2005) for 2019–2022

	Calculation method	2019	2020	2021	2022
x1	(current assets/non-current assets)	0.95	0.96	0.63	0.51
x2	(net sales revenue/current liabilities)	3.52	3.27	2.59	2.59
x3	(net sales revenue/equity)	34.60	-56.34	-23.81	-6.71
x4	(balance sheet/net sales revenue)	0.46	0.48	0.53	0.48
x5	((current assets-current liabilities)/current assets)	-0.27	-0.29	-0.87	-1.36
x6	((long-term liabilities + current liabilities)/balance sheet)	0.94	1.04	1.08	1.31
x7	(equity / (provision for future expenses and payments + long-term liabilities + current liabilities))	0.07	-0.04	-0.07	-0.23
Z (integral indicator of the level of bankruptcy threat)	$0,033X1+0,268X2+0,045X3-0,018X4-0,004X5-0,015X6+0,702X7$	2.84	-1.39	-0.24	0.37
Probability of bankruptcy		satisfactory financial condition and low probability of bankruptcy	the threat of a financial crisis	the threat of a financial crisis	the threat of a financial crisis

Source: compiled on the basis of [9]

Table 7 – SWOT analysis of “Silpo-Food” LLC

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. A well-known trademark</li> <li>2. An extensive network of stores covering most regions of the country</li> <li>3. Large assortment of goods</li> <li>4. Innovative approach to creating new supermarkets</li> <li>5. Production of own products</li> </ol>	<ol style="list-style-type: none"> <li>1. The presence of a loss at the enterprise</li> </ol>
Opportunities	Threats
<ol style="list-style-type: none"> <li>1. Expansion of the supermarket chain in Ukraine and abroad</li> </ol>	<ol style="list-style-type: none"> <li>1. Unstable political situation in Ukraine</li> <li>2. Increased competition in the market from domestic companies</li> <li>3. Deterioration in the solvency of the population</li> <li>4. Disruption of logistics routes</li> </ol>

Source: compiled on the basis of [9]

the amount of time a customer spends in a supermarket, supermarkets located near large business centers or large crowds of people, such as tourist destinations, should open coffee shops or bistros where they can drink coffee or tea and taste their own products.

In addition, you can learn from the experience of attracting customers and increasing competitiveness from European companies. The Swedish company Ikea, in 2020, introduced a rather interesting marketing strategy, since most supermarkets are located outside the city and take a long time to get to them, customers were offered to pay in their own time, the price of goods is indicated on the price tags in dollars and time, this initiative attracted customers. It is not relevant enough for Silpo-Food LLC to use this idea, but it is possible to partially adopt this experience and introduce a system of discounts for long waits at the checkout, for example, if a customer waited more than 10 minutes to pay for goods, his or her check is reduced by 5%. Silpo-Food LLC is quite active in supporting environmental initiatives, which also increases interest among consumers. Thus, one of the ways to increase the

company's competitiveness may be to install plastic bottle deposit machines, an environmental initiative that works quite well in Germany, where customers receive a receipt for the purchase of goods in this particular supermarket after handing in their plastic.

### Conclusions

In summary, we can conclude that bankruptcy is a state of affairs of an enterprise in which the debtor cannot fulfill its financial obligations to creditors and overcome financial difficulties arising from the deep financial crisis except through liquidation procedures.

Quite a number of Ukrainian enterprises went bankrupt and were forced to close down, which was caused by a large number of factors. In this paper, we have analyzed the work of Silpo-Food LLC in the context of uncertainty in the Ukrainian economy. At the moment, the company is operating at a loss, which may precede the company's future bankruptcy. Evaluating various bankruptcy models, we concluded that in 2022 the company was likely to go bankrupt. Also, having analyzed the SWOT analysis of the

company, it should be noted that the company has certain threats in its activities, including high competitiveness, disruption of logistics routes and deterioration of the company's solvency. Therefore, in order to avoid the enterprise, it should add cheaper, but at the same time high-quality products to the assortment, so that less protected consumers can make purchases from Silpo-Food LLC, and should also sign cooperation with local farmers who could deliver products to supermarkets located near them.

In addition, we proposed to open a cafe at the supermarket and make a discount for long waiting times at the checkout, as such marketing strategies are quite active abroad, so we believe that Ukrainian consumers will also be interested.

In general, Silpo-Food is a fairly innovative supermarket, with several of its stores ranked among the top 20 supermarkets in Europe, so if it continues to grow and focuses on customer satisfaction, the likelihood of bankruptcy will be quite low.

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