"Justification of sale terms as a way to minimize the cost of trade credit"

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JUSTIFICATION OF SALE TERMS AS A WAY TO MINIMIZE THE COST OF TRADE CREDIT

Abstract

The individual and implicit nature of the trade credit cost can provoke its increase, and, as a result, violate payment discipline and negative influence on the business price.

This research is dedicated to improving the sale terms definition to minimize the cost of trade credit.

The methods for determining the cost of trade credit of a particular company are proposed to apply, considering the results of the comparative analysis of other enterprises from the same industry.

Based on the example of Ukrainian food processing enterprises, it was revealed that 66% of them for the period 2013–2018 had an aggressive policy, and in 44% of the cases, it was connected with the growing role of trade credit. Minimum (23 days) and average (79 days) days payable outstanding, defined in the industry, were equated, respectively, to discount period and payment delay. Considering and comparing the cost of trade credit with alternative financial resources, the marginal level of the discount was determined. Considering the rate of short-term credit, according to the failed discount method, this level is 2.7% for 2018; toward the effective annual rate method – 2.48%. In the case of the overdraft, the marginal discount is 2.9% and 2.66%, respectively.

When the actual discount is equal or below this level, the buyer attracts trade credit instead of bank loans. Discount higher than marginal, longer discount period, and cheap alternative financing sources provide early payments, positive financial results, and make trade credit free of charge.

Keywords	financing policy, discount, bank loan, effective annual rate, food processing industry, Ukraine
JEL Classification	G21, G32, L66, O16

INTRODUCTION

Trade credit is one of the main sources of inventory financing at the enterprise. Its volume of the non-financial firms in 2017 was about 20% of U.S. gross domestic product (Garcia-Marin, Justel, & Schmidt-Eisenlohr, 2019) and 30% in the European Union in 2018 (Canto-Cuevas, Palacín-Sánchez, & Di Pietro, 2019). The accounts payable-to-GDP ratio in Ukraine is 98% (State Statistics Service of Ukraine, 2013–2017). Nowadays, due to the Covid-19 pandemic, most companies faced financial problems, which led to the increase of trade crediting, slowing down its day's payable outstanding (Boissay, Patel, & Hyun Song Shin, 2020).

Despite the advantages of trade credit, the management of its granting and attracting has some imperfection. The determination of trade credit cost is connected with the individual nature of sale terms (amount of discount, discount period, payment delay), which is set exclusively between the supplier and the buyer. Such a procedure does not always correspond to reality and may cause a high trade credit cost, which sometimes exceeds 40% per annum (Białek-Jaworska & Nehrebecka, 2016). Thus, the creditor can face the problem of doubtful and hopeless debts.

On the other hand, taking into account the significant share of trade credit in the total liabilities of the enterprises worldwide, such interest rate enlarges their weighted average cost of capital that negatively affects the price of the business.

Furthermore, the implicit nature of the cost of trade credit and lack of access to insider information leads to the fact that stakeholders (owners, investors, creditors) sometimes ignore trade credit as debt and do not include it to the enterprise's total capital.

1. THEORETICAL BASIS

A significant share of the current liabilities, including trade payable, in the capital is explained by the type of financing policy implemented at the enterprises. The capital structure and its role in the provision of the asset form a conservative, moderate or aggressive financing policy. The author's previous research gives ground to assess the conservatism, moderation, or aggressiveness through the share of net working capital (as a difference between current assets and current liabilities, from now on NWC) in the current assets. Thus:

- if NWC is ≥ 60% of the current assets, the policy of the company is conservative;

- if 40-59% – moderate;

- if less than 39% – aggressive;

- if the company's NWC is negative, the financing policy is determined as super-aggressive.

While the conservative policy traditionally focuses on the equity and long-term debts, the aggressive and super-aggressive one – on the current liabilities, in which trade payable usually plays a key role. Such a connection can be traced with the correlation coefficient between different indexes, presented in Table 1. It is possible to check how an increase of equity-to-capital ratio can ensure the conservatism in the financing; in other words, an increase of the NWC share in the firm's current assets. And vice versa, how the growth of the current liabilities, trade payable provokes the enterprise's aggressive policy and, as a result, increasing days trade payable outstanding of the company.

The scientists have different opinions toward the role of trade credit as a source of capital. Some of them define debt-to-capital ratio, usually including only short-term and long-term borrowed capital, except for accounts payable and other non-interest-bearing current liabilities, such as deferred tax liabilities, current provisions for vacation pay, warranty obligations, other expenses and payments; received advances; insurance; wages; internal payments; tax payable; accruals and deferred income ((National Accounting Standard 1, 2013). After analysis of 5,878 US companies, Damodaran (2020) determines the debt-to-capital ratio as of January 2020 at level 52.55% by book value (book debt-to-capital) and 22.18% by market value (market debt-to-capital). KPMG (2019) survey of 312 companies from Germany, Austria, and Switzerland for the 2018/2019 reporting year showed a share of loan capital in the financial resources as 25.7%.

Other researches investigate the place of trade credit in the enterprise's financing. The scientists study the dependence of trade payable on various factors, including the industry and region, size of the enterprise and its ownership structure, life cy-

Table 1. Variables for the correlation coefficient

Source: Defined by the author.

Variant	x	y
1	Equity/Capital	NWC/Current assets
2	Current liabilities/Capital	NWC/Current assets
3	Trade payable/Capital	NWC/Current assets
4	NWC/Current assets	Days trade payable outstanding
5	Trade payable/Capital	Days trade payable outstanding

cle phase, period, availability of the resources in the financial market (Rahman, Rozsa, & Cepel, 2018; Huang, Li, Ying, Yang, & Hassan, 2019; Cuñat & Garcia-Appendini, 2012). They revealed that small enterprises or beginners were more inclined to attract trade credit. The same applies to the private companies, which, unlike joint-stock or state-owned firms, due to their characteristics or objective reasons, do not have access to the developed financial market in the country or abroad for borrowing the alternative bank credit or other financial sources. The enterprises' experience from the Visegrad Group countries proved that manufacturing firms were more addicted to the debt in the material form than the service-oriented companies.

Despite the hidden nature of trade credit cost, the price of its attraction is calculated by the following methods. One of them is the cost of failing to take a cash discount. It considers the proposed discount, duration of its validity, and the term of payment delay (Block & Hirt, 1989, p. 206). The suppliers, pursuing a favorable credit policy of the buyers, give some discounts for prepayment of products (full or partial), payment on the day of delivery, or within the first days after the shipment, etc. If sale terms are unprofitable or the buyer cannot raise the resources to get a discount, the company loses such an opportunity to save, thereby forming its trade payable cost.

According to the alternative approach, trade credit cost can be defined as an effective annual rate (Ross, Westerfield, & Jordan, 2013, p. 664). This rate is built on the percentage rate, which is valid for a period calculated as the difference between the duration of payment delay and the discount term. The percentage rate is adjusted for the number of such periods during the year, obtaining an effective annual rate.

The researchers also include different penalties to the implicit cost of trade credit due to late payment (Cuñat & Garcia-Appendini, 2012). Comparing the days trade payable outstanding among different companies within the same industry, it can be noted that some of them have much longer terms than the average level, which can be the evidence of deliberate payment delay. The failure to comply with the agreements may lead to the situation when creditors apply to the commercial court, demanding the repayment of the liabilities and the penalties.

For example, Ukrainian legislation provides for several variants of the compensation for late payment. Talking about private business, the level of the penalties is arbitrary but is limited by the double discount rate of the National Bank of Ukraine (Law of Ukraine "On Responsibility for Untimely Fulfillment of Monetary Obligations", 1996). Civil Code provides another situation when penalties are based on the inflation index and 3% per year from the overdue amount for delay period (Civil Code of Ukraine, 2003). When borrowers missed the final due date, they should be potentially prepared to apply the creditors to the court. Due to the violation of the payment term, the cost of trade credit, in this case, will be increased by such penalties.

As Brealey, Myers, and Marcus (1995) explain, the high cost of trade credit is associated with the reimbursement of the supplier's costs for work with the debtors, management of receivables, collection of the doubtful debts, etc.. Because of that, such type of debt occupies one of the lowest positions in the pecking order theory (Białek-Jaworska & Nehrebecka, 2016).

The complexity of the mentioned methods for determining the cost of trade credit is connected with insider data. The level of the discount, the duration of its validity, the general deferral of payment are agreed exclusively by the supplier and buyer. Such individual arrangements, being biased and baseless, can enlarge trade credit cost and decrease important value-based indexes of the business.

The basis for the improvement of the procedure can be comparing the different indicators, which characterize the current activity of other companies in a similar economic sphere or industry. After all, these enterprises have the same peculiarities of raw material purchase, production, and sale processes. Using benchmarking principles, it is possible to compare the financing policy among selected companies in the sector, reveal the share of accounts payable in their capital, minimum, maximum, and average days payable outstanding, other trends in trade credit. The comparative anal-

ysis gives the necessary information for the justification of the sale terms at the level of particular business entities and provides the cost of trade credit, which corresponds to the market's reality, where enterprises exist.

In this regard, this research aims to improve the sale terms definition to minimize the cost of trade credit.

Combining mentioned methods of the cost of trade credit (cost of failing to take a cash discount, effective annual rate and penalties) with potential results of the comparative analysis, next elaborations can be proposed:

1. The minimum duration of days trade payable outstanding in the industry – $DTPO_{\min}$, revealed among the analyzed set of the enterprises, is equated to discount period – DP (formula 1):

$$DTPO_{\min} = DP. \qquad (1)$$

2. The average duration of days trade payable outstanding in the industry – $DTPO_{average}$ – is equated to payment delay – PD. This will fix the final due date (formula 2):

$$DTPO_{average} = PD. \qquad (2)$$

Days trade payable outstanding is the period during which the enterprise makes the payment for granted trade credit. The average level of this value among the enterprises' selected set may indicate the payment delay that is usually provided by the suppliers within the industry.

If the market is competitive, the suppliers, to attract the customers, set the favorable sale terms concerning payment delay and the discount and period of its validity. Therefore, the minimum days trade payable outstanding, determined for the surveyed companies, can be assumed as a discount period. Receiving a discount may be one reason why one of the companies pays off the accounts payable quicker than the rest enterprises in the industry.

The calculation of the cost of trade credit is only an auxiliary step to decide on its attraction. The

cost of trade payable, calculated by the failed discount or effective annual rate methods, must be compared with the annual interest rate on a bank loan. Due to the lack of funds, the company can apply for cash to the bank to pay to the supplier within the settled period and get the desired discount. If the cost of trade credit is higher than the bank interest rate, it makes sense to do so. A bank loan up to one year or an overdraft is intended to replenish the working capital, so both can be used. The amount of the discount in cash equivalent will be larger than the financial costs of the bank loan; the company will receive a positive financial result and the opportunity to invest the savings. Getting the discount means zero cost of trade payable for the enterprise.

Vice versa, the supplier, reducing the amount of the discount and/or shortening its period and/or increasing the term of payment delay, may lead to a situation when the cost of trade credit becomes less than or equal to the bank interest rate. In this case, it will be unprofitable for the buyer to borrow money. The enterprise refuses the discount and agrees for payment delay, which automatically generates the trade payable cost.

The considered methods are based on comparing the cost of trade credit and alternative sources of financing. Under favorable conditions, the bank loan or other cheaper resource can replace trade payable. The degree of such substitution or complementation depends on the size of enterprises and their creditworthiness, sphere of activity, region (Rahman et al., 2018), the ratio of receivables and payables (Białek-Jaworska & Nehrebecka, 2016; Bărbuţă-Mişu, 2018), general economic situation (McGuinness & Hogan, 2014).

Applying the method of the potential penalties as the cost of trade credit, it is necessary to find out the difference between days trade payable outstanding of the chosen firm – $DTPO_{firm}$ and prevalent payment delay in the industry – $DTPO_{average}$. A positive difference means that the company slows down the repayment of trade credit comparing to other similar enterprises. It defines the period of the potential penalties accrual – PP (formula 3):

$$PP = DTPO_{firm} - DTPO_{average}. \qquad (3)$$

As long as the company raises the issue of the penalties accrual for late payment, trade credit was involved. In this regard, the amount of potential penalties is added to the cost of trade credit, previously determined by the failed discount or effective annual rate method.

The next part of the study presents the results of applying these methods, based on the reporting data of real enterprises.

2. RESULTS

The procedure of the sale terms justification is demonstrated on the example of the food processing enterprises of Ukraine, in particular, those that produce:

- cocoa, chocolate, and sugar confectionery;
- hard chuck and biscuits; production of the flour confectionery, cakes, and pastries for the long storage;
- bread and bakery products; production of the cakes for the short-term storage;
- products of the flour and cereal industry.

These types of economic activity are similar in characteristics. The offered goods are essential products such as bread, or, in the case of confectionery, favorite desserts that are consumed almost daily. The food processing industry should consider the individual tastes of the customers, global trends in healthy food, offer a wide range, so it should usually be characterized by a stable demand, which has a positive effect on the duration of production and operating cycles, overall financial stability. This industry in Ukraine is competitive, export-oriented, and one of the most technologically advanced.

The majority of the food processing industry is presented by the private sector and small enterprises, which in some way restricts access to their reports. Therefore, the annual financial statements for 2013–2018 of 21 publicly available companies are selected for further analysis (Stock Market Infrastructure Development Agency of Ukraine, 2013–2018). Thus, taking into account these enterprises and their activity period, the total number of studies (cases) will be 116.

The analysis of the enterprises' activity from the food processing industry revealed such division by the type of financing policy (Table 2).

Table 2. The distribution of cases by the type of financing policy

Source: Calculated by the author.

Type of the financing policy	Cases	Share of the total, %	Share of NWC in the current assets, %
Conservative	27	23	76
Moderate	13	11	48
Aggressive	25	22	16
Super-aggressive	51	44	NWC < 0
Total	116	100	−

The domestic enterprises' predominant focus on the aggressive financing policy determines a significant share of the current liabilities (from now on CL) in their financial resources (Table 3).

Table 3. The role of the current liabilities in the formation of the enterprises' financial resources

Source: Calculated by the author.

Year	CL/Capital	Trade payable/Capital
2013	34	22
2014	42	26
2015	38	25
2016	40	24
2017	47	25
2018	48	22
Average for 2013–2018	41	24

Some of the cases are characterized by such a level of super-aggressiveness, when the negative net working capital exceeds, sometimes 13 times, the enterprise's current assets. If one removes these cases from the sample, reducing the number of studies from 116 to 93, the correlation between different balance sheet items of the enterprises will be as follows (Table 4).

Using data of the domestic financial market and food processing enterprises during 2013–2018, Table 5 presents the components for calculating the cost of trade credit and a marginal level of the discount.

It should also be noted that the bank interest rates (Table 5, column 6) in practice can be increased by the amount of the commissions, insurance pay-

Table 4. The correlation coefficients of the food processing enterprises

Variant	x	y	The correlation coefficient
1	Equity/Capital	NWC/Current assets	0.5807
2	Current liabilities/Capital	NWC/Current assets	−0.7468
3	Trade payable/Capital	NWC/Current assets	−0.4435
4	NWC/Current assets	Days trade payable outstanding	−0.3798
5	Trade payable/Capital	Days trade payable outstanding	0.3664

Table 5. The cost of trade credit based on the failed discount

Year	Discount, %	Discount period, days	Payment delay, days	Cost of trade payable, %	Interest rate on the short-term bank loan in UAH, %
2013	3.23	31	116	14.1	14.1
2014	4.09	34	128	16.3	16.3
2015	5.5	27	127	21.0	21
2016	3.31	26	96	17.6	17.6
2017	2.65	24	95	13.8	13.8
2018	2.7	23	79	17.8	17.8

Note: column 5 = column 6; column 2 is calculated using the cost of failing to take a cash discount.

ments, other additional charges, and transaction costs. The process of bank lending is long, so, to get a discount quickly, the buyer must think about the source and amount of the borrowed funds. Therefore, in the real situation, the bank interest rate may be higher, which will change the cost of trade payable for the customer. If the interest rate on the overdraft instead of the short-term bank loan is taken into account in Table 5 (column 6), the following results will be obtained (Table 6).

The determination of the effective annual rate is presented in Table 7. It applies a similar level of the bank interest rate, discount period, payment de-

Table 6. The cost of trade credit in case of the overdraft interest rates

Year	Discount, %	Discount period, days	Payment delay, days	Cost of trade payable, %	Overdraft interest rates, %
2013	4.16	31	116	18.4	18.4
2014	4.63	34	128	18.6	18.6
2015	6.35	27	127	24.4	24.4
2016	4.58	26	96	24.7	24.7
2017	3.81	24	95	20.1	20.1
2018	2.9	23	79	19.2	19.2

Table 7. The effective annual rate calculation (in case of the short-term bank loan)

Year	Discount, %	Discount period, days	Payment delay, days	Term of trade credit, days	Percentage rate for the term of trade credit (decimal)	Compounding periods per year	Effective annual rate, %	Interest rate on the short-term bank loan in UAH, %
2013	3.03	31	116	85	0.0312	4.29	14.1	14.1
2014	3.81	34	128	94	0.0396	3.88	16.3	16.3
2015	5.08	27	127	100	0.0535	3.65	21	21
2016	3.06	26	96	70	0.0316	5.21	17.6	17.6
2017	2.48	24	95	71	0.0254	5.14	13.8	13.8
2018	2.48	23	79	56	0.0254	6.52	17.8	17.8

Note: column 5 = column 4 – column 3; column 6 = column 2/(1 – column 2); column 7 = 365/column 5; column 8 = column 9; column 2 is calculated by the method of effective annual rate.

Table 8. The effective annual rate calculation (in case of the overdraft)

Year	Discount, %	Discount period, days	Payment delay, days	Term of trade credit, days	Percentage rate for the term of trade credit (decimal)	Compounding periods per year	Effective annual rate, %	Overdraft interest rates, %
2013	3.86	31	116	85	0.0401	4.29	18.4	18.4
2014	4.3	34	128	94	0.0449	3.88	18.6	18.6
2015	5.8	27	127	100	0.0616	3.65	24.4	24.4
2016	4.15	26	96	70	0.0433	5.21	24.7	24.7
2017	3.5	24	95	71	0.0363	5.14	20.1	20.1
2018	2.66	23	79	56	0.0273	6.52	19.2	19.2

lay, at which the company decides to attract trade credit as a source of the debt.

The results of sale terms and the effective annual rate, estimating the overdraft as an alternative to the trade credit, are presented in Table 8.

The analysis of the enterprises within the food processing industry showed a variety in terms of their days trade payable outstanding. For further calculation, the enterprises characterized by the longest days payable outstanding among similar industry companies were selected. Thus, Kremenchuh confectionery factory "Roshen" (2013, 2015), Kyiv confectionery factory "Roshen" (2014), Rivne confectionery factory (2016), "Odesakondyter" (2017), and confectionery factory "Kharkivianka" (2018) were chosen (Stock Market Infrastructure Development Agency of Ukraine, 2013–2018).

The example of the calculation of the potential penalties is proposed in Table 9.

The obtained results enable identifying the following trends in the financing policy and structure of the capital, particularly the cost of trade credit, of the food processing enterprises, which will be discussed next.

Table 9. Variants of penalties as a cost of trade credit

Year	Average payment delay in the industry, days	Days trade payable outstanding of the company, days	Term of late payment, days	Trade payable of the company, thousand UAH	Variant 1				Variant 2		
					Annual inflation index	Inflation costs, thousand UAH	3% per year	The cost of trade payable, %	Double discounting rate, %	Double discounting rate for the term of late payment, thousand UAH	The cost of trade payable, %
Kremenchuh confectionery factory "Roshen"											
2013	116	260	144	91,527	100.5	180.55	1,083.28	1.38	13.5	4,874.75	5.33
Kyiv confectionery factory «Roshen»											
2014	128	306	178	185,548	124.9	22,531.12	2,714.59	13.61	24	21,716.74	11.7
Kremenchuh confectionery factory "Roshen"											
2015	127	316	189	206,683	143.3	46,340.59	3,210.66	23.97	53.18	56,914.38	27.53
Rivne confectionery factory											
2016	96	194	98	3,004	112.4	99.74	24.13	4.12	34.6	278.31	9.26
"Odesakondyter"											
2017	95	303	208	11,955	113.7	933.34	204.38	9.52	26.44	1,801.28	15.07
Confectionery factory "Kharkivianka"											
2018	79	215	136	171,225	109.8	6,252.3	1,913.97	4.77	34.62	22,087.18	12.9

Note: column 4 = column 3 – column 2; column 7 = (column 6 * column 5)/ 365 * column 4; column 8 = (3% * column 5)/ 365 * column 4; column 9 = (column 7 + column 8)/ column 5 *100%; column 11 = (column 10 * column 5)/365 * column 4; column 12 = (column 11 / column 5) * 100%.

3. DISCUSSION

The distribution of the companies by the types of financing policy is uneven. Among 116 cases, the majority (44%) is characterized by the super-aggressive financing policy, i.e., negative NWC. 22% of cases show the aggressive financing policy when NWC is near 16% of the current assets. 11% of cases have a moderate financing policy with 48% NWC share and 23% – conservative policy, where NWC reaches 76% of the current assets (Table 2).

It should be noted that domestic producers of the confectionery, bread, products of the flour, and cereals industry support the significant share of the equity in the capital regardless of the financing policy type. The average level of equity-to-capital ratio for 116 studies during 2013–2018 is 50%. In particular, enterprises with the super-aggressive financing policy have an average equity share – 42% from the financial resources, which reduces the likelihood of their bankruptcy and violation of financial stability.

Whereas the surveyed companies are mainly focused on the aggressive and super-aggressive financing policy, the significant share of the current liabilities in their capital should be expected. In fact, it grows over the years, from 34% in 2013 to 48% in 2018 (Table 3). The main sources of such liabilities are accounts payable for goods, works, services, or trade payable. Its share in the total capital of the enterprises for the period 2013–2018 is, on average, 24%.

Among 21 surveyed companies, some firms radically change their financing policy during 2013–2018. For example, "Odesakondyter" is gradually moving from a moderate policy to aggressive and super-aggressive. Such changes are associated with the reduction in sales, decrease in the inventories, receivables, growing role of the current liabilities as to the financing's main sources (Stock Market Infrastructure Development Agency of Ukraine, 2013–2017).

The reduction in sales and current activity explains the transition to the conservative policy in 2015 and 2016 of Rivne confectionery factory (Stock Market Infrastructure Development Agency of Ukraine, 2013–2018). The growth of NWC with the simultaneous reduction of the current assets leads to the conservative policy, which, in this case, is a negative consequence.

During 2013–2018, Vinnytsia confectionery factory changed the financing policy from the super-aggressive to conservative several times, and vice versa. In 2013 and 2014, its current liabilities were 7 and 2 times larger than the current assets, and the super-aggressive financing policy characterized the company. Then, with stable sales in 2015, there was a sharp reduction in trade receivables and payables. NWC became positive and reached 77% of the currents assets, forming the conservative policy. Next year, trade payable increased seven times than 2015, which led to the super-aggressive financing policy again. Further reduction of the current liabilities and their components in 2017 and 2018 returned the company to the conservative financing policy (Stock Market Infrastructure Development Agency of Ukraine, 2013–2018).

Such abrupt changes violate the financial strategy of the enterprise, negatively affecting the stability and solvency.

The correlation coefficients between different balance sheet items of the enterprises reveal that the increase in the conservatism degree of the financing policy by 58% is associated with the increase in their financial independence, in other words, the share of equity in the capital (Table 4). When the surveyed companies increase the share of the current liabilities in the financial resources, it provokes the aggressiveness in 75% of cases, as it reduces the share of NWC in the current assets. Regarding the share of trade payable, a similar figure is 44%.

Simultaneously, the growth of the role of trade credit among the capital of the food processing enterprises slows down the days payable outstanding only in 36.6% of cases. This is positive evidence because the borrowing in the material form does not harm much the payment discipline, creditworthiness, and business reputation of the surveyed enterprises.

Using the industrial indexes, the cost of trade credit based on the failed discount was determined (Table 5).

For example, in 2018, the minimum duration of days trade payable outstanding, revealed in the food processing industry – 23 days, was taken as a discount period (column 3). The average days trade payable outstanding for the industry – 79 days – were equated to the adopted payment delay for trade credit (column 4) (Stock Market Infrastructure Development Agency of Ukraine, 2013–2018).

In the absence of own funds to obtain the discount, the buyer can attract a short-term bank loan to replenish the working capital. The interest rate in the domestic financial market in 2018 is 17.8% per annum (column 6) (National Bank of Ukraine, 2013–2018).

If one equates the cost of trade credit (column 5) and interest rate (column 6), the discount level in 2018 can be determined as 2.7% (column 2). If the discount is equal to or less than 2.7%, it is not worth borrowing money from the bank. Consequently, the discount received in cash will be less than or equal to the bank loan's financial costs. The buyer should refuse the discount, agree to the payment delay, and attract trade payable, the cost of which then will be 17.8% per annum.

If the supplier increases the discount, its period reduces the duration of payment delay, the cost of trade credit will be higher than the bank interest rate. Then it will be profitable to attract the short-term bank loan, get a discount, repay the financial costs, and stay in the black. Different variants of the sale terms and their consequences are given in Table 10.

Table 10 uses the average volume of trade payable among surveyed enterprises in 2018–128,028

thousand UAH. With a 2.7% discount, valid for 23 days, with a total payment delay 79 days (variant 1), the food processing enterprise receives a negative financial result. This causes the unprofitability of such sale terms and the refusal of the discount.

When under the existing conditions, the supplier increases the discount (for example, up to 3% – variant 2) or its period (up to 30 days – variant 3), or reduces the payment delay (down to 65 days – variant 4), the cost of trade credit will exceed the bank interest rate. At an annual 17.8% on a short-term bank loan, the cost of trade payable for 2-4 variants are 19.9%, 20.4%, and 23.8%, respectively. If the company agrees to borrow at the bank, it will get the discount. Then the real cost of trade credit will be zero, and there will be positive financial results.

Talking about another source of the capital – overdraft, it is usually characterized by a simplified procedure of the attraction, the absence of the need to provide collateral, favorable conditions for the debt repayment, this type of credit is more expensive than the short-term bank loan (Table 6, column 6). This leads to a higher marginal level of the discount. For 2018, it is 2.9% and the cost of trade credit for the buyer – 19.2%, comparing to 2.7% and 17.8% in the case of short-term bank loans.

It is obvious that sale terms, the discount level, and the cost of trade payable, presented in Tables 5 and 6, are different year by year and determined by the dynamics of the bank interest rates and the general economic situation in the country for the studied period. Political instability in Ukraine led to an economic downturn, which, in this case, reflect-

Table 10. The variants of sale terms for 2018

Source: Calculated by the author.

Index	Variant 1	Variant 2	Variant 3	Variant 4
Average volume of trade payable in the industry, thousand UAH	128,028	128,028	128,028	128,028
Discount, %	2.7	3	2.7	2.7
Discount period, days	23	23	30	23
Payment delay, days	79	79	79	65
Cost of trade payable, %	17.8	19.9	20.4	23.8
Interest rate on the short-term bank loan in UAH, %	17.8	17.8	17.8	17.8
Received discount, thousand UAH	3,456.76	3,840.84	3,456.76	3,456.76
Financial costs on the short-term bank loan, thousand UAH	3,544.95	3,544.95	3,101.83	2,658.71
Financial result, thousand UAH	−88.19	295.89	354.93	798.05

ed in the growing of days payable outstanding up to 128 and 127 days in 2014 and 2015, respectively. The rising inflation index caused a significant increase in the interest rates: from 14.1% in 2013 to 21% in 2015 on the short-term bank loan and from 18.4% in 2013 to 24.7% in 2016 on overdraft.

Within the method of the effective annual rate, the same discount period and payment delay are used. In 2018, they were, respectively, 23 days and 79 days. Their difference determines the term of trade credit – 56 days (Table 7, column 5). The compounding periods per year are 6.52 (column 7).

Since the effective annual rate is also compared to the cost of the alternative source of financing, columns 8 and 9 are equal to each other. This determines the marginal level of the discount at which the buyer will be forced to refuse it and attract trade payable. For 2018, this discount is 2.48% (column 2). During the trade-credit term (56 days), the buyer pays the percentage rate of 2.54% (column 6).

The effective annual rate can be similarly recalculated, taking into account the overdraft interest rate as an alternative to the short-term bank loan. If the discount level for 2013–2018 in case of the short-term bank loan is: 3.03%; 3.81%; 5.08%; 3.06%; 2.48% and 2.48% (Table 7, column 2), then in case of the overdraft's attraction the discount will be respectively: 3.86%; 4.3%; 5.8%; 4.15%; 3.5% and 2.66% (Table 8, column 2).

Both methods – the cost of trade credit based on the failed discount and the effective annual rate – use the same discount period, payment delay, revealed among the food processing enterprises. Although, the obtained results toward the optimal sale terms are different. Assessing in 2018 the possibility of attracting the short-term bank loan, given 79 days of payment delay and 23 days of the discount period in the industry, the marginal level

of discount is 2.7% (Table 5, column 2). According to the method of the cost of failing to take a cash discount, this is a result. The effective annual rate method gives a lower level – 2.48% (Table 7, column 2). In the overdraft case, the difference is 2.9% (Table 6, column 2) and 2.66% (Table 8, column 2), respectively.

The selection of the method, their combination, and application in practice for determining the cost of trade credit is up to the enterprise. Using methods in such a way allows the supplier to justify the sale terms (payment delay, discount, its period) to encourage early payment, avoiding bad debts. On the other hand, the buyer can plan cash flows if necessary, attract the borrowed resources, define the possibility of getting the discount, and determine the cost of trade payable as a loan source.

The results of the calculation of the potential penalties can be demonstrated on the example of a particular company. In 2018, at the industry's average payment delay – 79 days – confectionery factory "Kharkivianka" has 215 days trade payable outstanding (Table 9, column 3). Applying different variants of the penalties, the cost of trade payable for the enterprise can potentially be 4.77% (based on the inflation index and 3% per annum – variant 1) or 12.9% if the penalties are limited to the double discount rate of National Bank of Ukraine (variant 2). The selection of the variant and the actual charging will depend on the commercial court's decision in case of the application of the creditor-supplier.

It should be noted that the difference of the days payable outstanding among enterprises in the same field of the economic sphere can be a real agreement between the supplier and the buyer. However, the borrower, analyzing the indexes of similar companies in the industry, can make appropriate conclusions and assess the risks concerning its activity.

CONCLUSION

Most surveyed manufacturers of confectionery, bread, products of the flour, and cereal industry are focused on the aggressive and super-aggressive financing policy. The increase of its aggressiveness in 75% of cases is accompanied by the growing share of the current liabilities and by 44% by the share of trade payable in the capital.

The implicit nature of the cost of trade credit, which is based on the individual agreements between the supplier and the buyer, regarding the discount's level, duration of its validity, payment delay, causes the complexity of its consideration in practice.

To increase the reasonableness of sale terms, set by the supplier, to enable the use of information by various stakeholders, the existing methods of determining the cost of trade credit are proposed to apply benchmarking principles. Thus, the method of the cost of failing to take a cash discount, the effective annual rate, and the method of the penalties use the minimum and average days payable outstanding revealed as a result of the comparative analysis of a sample of food processing enterprises for the period 2013–2018.

The main trend is their reduction over the previous six years, respectively, to 23 days and 79 days in 2018, which should positively impact the payment discipline of the surveyed companies. Within the existing method, the minimum days payable outstanding, defined in the industry, were equated to the discount period, and average days payable outstanding – to payment delay.

Comparing the cost of trade credit with alternative financial resources, the discount's marginal level was determined. At this level or below, it will not be profitable for food processing enterprises to borrow money. In that case, the companies will refuse the discount and agree to the payment delay. According to the method of the cost of failing to take a cash discount, assessing the possibility of the attracting the short-term bank loan (annual interest rate 17.8%), given 79 days of payment delay and 23 days of the discount period in the industry, the marginal level of discount is 2.7% in 2018. The method of the effective annual rate gives a lower level – 2.48%. In the overdraft (annual interest rate 19.2%), the marginal discount level is 2.9% and 2.66%, respectively.

If a violation of the permitted payment delay occurs, the penalties can be accrued on a particular enterprise's amount of trade payable. The penalties will be added to the cost of trade credit.

Increasing the level of the discount, its period, reducing the payment delay by the supplier or looking for the cheaper sources of the financing by the buyer stimulate the substitution effect of the accounts payable by the bank loan, make sale terms more favorable, encourage early payment and, therefore, trade credit – free of charge.

The proposed measures for justification of the sale terms, based on the comparative analysis of the enterprises in the same economic sector, allow defining the objective trade-credit cost and considering it in the assessment of the weighted average cost of capital, economic and cash value-added, other indicators, which different stakeholders are interested in. The application of the cost of trade credit in the system of value-based management is a direction for further scientific research.

AUTHOR CONTRIBUTIONS

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Funding acquisition: Tetiana Konieva.
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