

# Small Business Financial Management Optimization Model

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## Abstract

The scientific financial management is one of the main important leverage that small companies can successfully used in competition with the large ones. Starting from a strategic financial management model specific to SME, this paper presents a method to optimize it with the final goal of improving business sustainability. Optimization method is developed in four directions: cost, stocks & receivables, investments and risk aiming at increasing profitability and financial balance of business. Cost optimization method requires both scientific determinations, which mean establishing consumption and cost calculations, and cost analysis, which involves the calculation of efficiency indicators on different cost categories. Stocks and receivables optimization method require a balance within current resources allowing continuity of production and financial flows that means to minimize working capital requirements (NFR) and ensuring rotational speeds of receivables under the current level of debt in terms of minimum liquidity values. Financial management of investments optimization method aimed to achieve a balance of permanent resources allowing performing investments without affecting the financial current cycle that means a level of working capital (FR) over at the investment. Business risk management optimization method aimed diminishing share of fixed and financial costs in operational result formation. Finally, an example of applying the method is presented and draws conclusions.

## Keywords

optimization, financial management, cost

## 1. Introduction

According to the US Small Business Administration [1], „small-business concern, including but not limited to enterprises that are engaged in the business of production of food and fibre, ranching and raising of livestock, aquaculture, and all other farming and agricultural related industries, shall be deemed to be one which is independently owned and operated and which is not dominant in its field of operation”.

In UE, by small business (SB) is undertaking “there one where 25% or more of enterprise’s capital (or equity) is not undertaken by an enterprise” and “annual turnover not exceed 50 mil. Euro, or annual balance sheet not exceeding 43 mil. Euro” [2].

In Romania, a SB comply with the criterion of independence, meaning that it is not owned in a proportion greater than 25% of another company in the category of medium or large, and is delimited by the maximum number of employees (49), maximum turnover (10 million euro) and the maximum amount of assets (10 million euro) [3].

As can be saw, in UE and also in Romania, SB are turnover and capitalization limited that determinate a certain vulnerability on the market in competition with the large companies.

According to specialists [4] “the main causes of business failure to SME is the lack of financial planning, limited access to funding, lack of capital, unplanned growth, low strategic and financial projection, excessive fixed-asset investment and capital mismanagement”.

In these conditions, “a new conceptual model was needed to identify the key practices of financial management ... for overcoming the financial management problems and also attain a higher organizational performance in small and medium size companies” [5].

## 2. Strategic Modelling

From financial perspective, SB over the large one is characterized by:

Strengths: higher financial flexibility, lower share of labour costs, lower share of stocks and lower share of management costs.

Weaknesses: lower level of available capital, higher cost of credit caused by the reduced capacity to guarantee, higher cost of raw materials, materials and services, due by the lower volume of acquisitions, higher level of receivables due to customer’s great negotiating power and lower sale prices for reasons of competition with large enterprises.

SB's main financial nature opportunities are: the low interest of large enterprises to certain products, the availability of large enterprises to collaborate with small companies in the manufacturing of certain products (including its financing), the European grant funding programs for SME's [6] and the National Credit Guarantee Fund for SME's [7].

The main financial nature threats of SB are: the higher risk of business profitability caused by low negotiating power with customers and the higher risk of insolvency caused by lower capitalization of business.

In these circumstances strategies for small business financial management are focused on:

- I. Shrinking weaknesses through forces. Are taken into account the following goals:
  - a) scientific management of costs, in order to compensate the higher cost of resources through savings in domestic consumption
  - b) scientific management of capitals, in order to reduce the need for external capital using of the own capitals increased flexibility
  - c) scientific management of stocks and receivables, in order to reduce their cumulative share in current assets
  - d) scientific management of value added, in order to preserve it, while reducing its selling prices
- II. Shrinking weaknesses and reduce risks through better capitalization of opportunities. Are taken into account the following goals:
  - a) accessing European funds for micro-enterprises (Regional Operational Programme 2014-2020, Priority 2.1: 1 Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators). Investment program is financed by grants without affecting working capital thus reducing the risk of insolvency.
  - b) Timely access to bank loans guaranteed by National Credit Guarantee Fund for SMEs. It significantly reduces the cost of credit and insolvency risk.
- III. Use forces to maximize the opportunities and diminish the risks:
  - a) Focusing investment on production diversification plans. It creates premises to rise prices in the borderline range, due to reduced competition, thus diminish the risk of profitability.
  - b) Flexible bonuses to stimulate the creativity of personnel. It creates premises to rise both competitiveness of product and personell earnings.

### 3. Method to Optimize Financial Management of Small Businesses

Given the above, our research is moving toward optimizing small business financial management process that takes place on 4 directions, each with individual objectives, conjugated to the final goal of increasing the business sustainability (Figure 1).

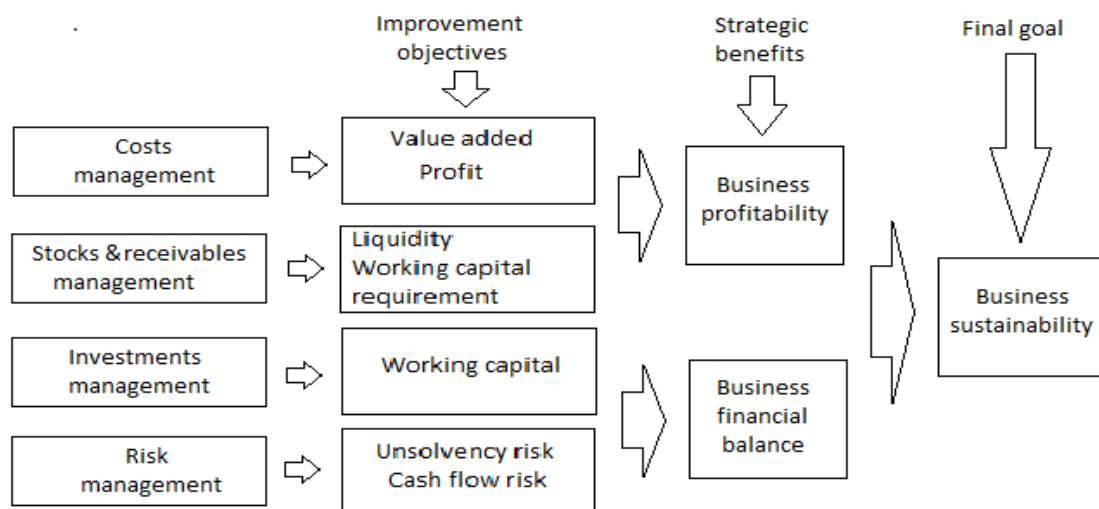


Fig. 1. Small business financial management optimization model

### 3.1. Cost management

Cost management involves the following steps:

1. Establishing consumption and cost calculations, which set the level of individual cost according to specific consumption of resources.
2. Cost analysis, which involves the calculation of efficiency indicators on cost categories. Thus deviations are set against different standards and are taking action to compensate them.

#### 3.1.1. Cost calculation method

Specific for SB is the predicting and partially cost calculation, based on the significant values of manufacturing costs and its monitoring by conducting production process.

Significant values of costs are those which, by their share in total cost, are liable to alter the decision of manufacture.

The proposed calculation method involves the following steps:

- I. Sharig significant cost (CS) in two categories: direct costs (CD), attached directly to each product (specific raw materials, specific salaries and taxes related) and indirect costs (CI), common to a group of products / services, attachable to product-object of calculation following a sharing process (common production expenses: amortization equipment, security, transport, supply):

$$CS = CD + CI ; \quad (1)$$

- II. Direct unitary cost calculation, by the method of simple division

$$C_u D = \frac{CD}{Q} ; \quad (2)$$

- III. Establishing the group of products that assumes common costs, the basis product and calculation of the sharing coefficients of all other products ( $K_i$ ) reported to the basis product

$$K_i = \frac{C_i}{C_b} , \quad (3)$$

where  $C_i$  = cost of product "i", and  $C_b$  = cost of basis product.

- IV. Calculation of the equivalent amount of basis product

$$Q_b = \sum Q_i \cdot K_i ; \quad (4)$$

- V. Calculation of indirect unitary cost of basis product

$$C_{u_b} I = \frac{CI}{Q_b} ; \quad (5)$$

- VI. Calculation of indirect unitary cost of product- object of calculation

$$C_u I = C_{u_b} \cdot K_i ; \quad (6)$$

- VII. Calculation of unitary cost of product - object of calculation

$$C_u = C_u D + C_u I . \quad (7)$$

#### 3.1.2. Cost analysis method

The proposed analysis method involves the following steps:

- I. Sharig significant cost (CS) in two categories: fixed costs (CF), independent by the variation, within certain limits, of production volume (capital goods depreciation, rents) and variable costs (CV), which change depending on production volume (raw materials, direct wages):

$$CS = CF + CV ; \quad (8)$$

- II. Calculation of variable unitary cost:

$$C_u V = \frac{CV}{Q} , \quad (9)$$

where  $Q = \sum Q_i$  (total production);

- III. Calculation of average selling price of production:

$$\bar{P} = \frac{\sum P_i \cdot Q_i}{Q}, \quad (10)$$

where  $P_i$  = individual product selling price;

IV. Calculation of production in the breakeven point:

$$Q_r = \frac{CF}{\bar{P} - C_u V}; \quad (11)$$

V. Calculation of safety coefficient of sales:

$$K_s = \frac{\sum P_i \cdot Q_i}{Q_r \cdot \bar{P}}. \quad (12)$$

A value below 1 indicates a situation of maladjustment of sales to costs, a value below 1.5 indicates a situation to the limit while a value above 1.5 indicates a good perspective on business.

VI. Calculation of minimum average selling price that the business can sustain it:

$$\bar{P}_{\min} = \frac{CS}{Q}. \quad (13)$$

As much the market selling price is higher than the minimum average selling price, the chances to hold the business on market are higher.

VII. Calculation of predicted efficiency indicators of sales, production, earnings and profitability such as: turnover, value added, rate of value added in turnover, rate of material and salary expenses in value added, operating result, rate of result in turnover, rate of result in assets.

### 3.2. Stocks and receivables management

Efficient management of inventories and receivables require a balance within current resources allowing continuity of production and financial flows. The core of the method is to minimize working capital requirements (NFR) and ensuring rotational speeds of receivables ( $V_{cr}$ ) under the current level of debt ( $V_{Dc}$ ) in terms of minimum liquidity values (current, partial and instant).

Using notations:  $A_{cicl}$  = cyclical assets,  $R_{temp}$  = temporary resources,  $\bar{S}_{cr}$  = average balance of receivables,  $\bar{S}_{Dc}$  = average balance of current debts, and  $R_{Dc}$  = total current debts, are valid the relations

$$NFR = A_{cicl} - R_{temp}, \quad (14)$$

$$V_{cr} = \frac{\bar{S}_{cr}}{CA} \cdot 365, \quad (15)$$

$$V_{Dc} = \frac{\bar{S}_{Dc}}{R_{Dc}} \cdot 365. \quad (16)$$

### 3.3. Investments management

Financial management of investments aimed at achieving a balance of permanent resources allowing performing investments without affecting the financial current cycle. It targets a level of working capital over at the investment. The main indicators used in evaluation are the working capital (FR) and the rate of investment in the working capital ( $R_i$ ):

$$FR = R_{perm} - A_{imob}, \quad (17)$$

$$R_i = \frac{I}{FR}, \quad (18)$$

where  $R_{perm}$  = permanent resources,  $A_{imob}$  = fixed assets, and  $I$  = total investment.

### 3.4. Risk management

Scientific management requires reducing business risk, caused by the low profitability of activities

or the low level of capital investment. Optimization method aimed diminishing share of fixed and financial costs in operational result formation.

The main indicators of risk management used in evaluation are the operating leverage coefficient (CLE), the financial leverage coefficient (CLF) and the total leverage coefficient (CLT):

$$CLE = \frac{R_{exp} + CF}{R_{exp}}, \tag{19}$$

$$CLF = \frac{R_{exp}}{R_{exp} - C_{fin}}, \tag{20}$$

$$CLT = CLE \times CLF, \tag{21}$$

where  $R_{exp}$  = operating result,  $CF$  = fixed costs,  $C_{fin}$  = financial costs.

#### 4. Case Study

It shows the plan of optimizing the financial management of a new business in the manufacture of natural apple juice (NMS), in a horizon of three years, the strategic objective being moderate growth assumed on a highly competitive market.

The main objective is the scientific evaluation of business perspectives and opportunities to meet the strategic object assumed by the investor.

##### 4.1. Preliminary information

The share capital of the company is 25000 lei and the constitutive act provides a period of 5 years for accumulation during which shareholders shall not be granted. The total investment is 21800 lei and consists in depreciable operating assets, without additional investment products in the next three years. During this period, is ensured business financing for 100% of own funds.

From market research, for the first year, are identified two scenarios for production and sales:

- A. the hopeful one – according which production, targeted in Table 1, is entirely sold;
- B. the pessimistic one – according which, production is achieved only in part by sales, 50% in the first year, 40% in year 2 and 30% in year 3.

Table 1. Product range and average production estimated for the first year

Product	Pack type	Quantity [pcs]	Volume [L]	Selling price [lei]	Revenue [lei]
SNM 0.5	PET 0.5 L	6400	3200	4	25600
SNM 1.0	PET 1 L	3200	3200	7	22400
SNM 2.0	BIB 2L	1600	3200	12	19200
TOTAL		11200	9600		67200

For the 2nd year, in both alternatives, is expected to increase sales by 4.2% while keeping selling prices and an increase in average unit costs of production by 8%, particularly those with raw materials (14%), rent (25%) and wages (5%).

For the third year is expected to further increase sales volumes by 5%, while higher selling prices by 10% and the increase in average cost of production by 13%, for expenditure with raw materials (12%), rent (20%) and wages (5%).

##### 4.2. Optimization model

Given the type of activity (production), stage of life (early) business and strategic objective (moderate growth) are established the following items of the optimization model:

- The cost of production is significant in determining financial result;
- The high significance of sales growth in achieving the objectives of business Strategic Plan;
- The level of stocks and receivables is uncertain and cannot be predicted at this time.

Thus, the optimization of the business model, in the conditions set out above, targeting the areas: cost, investment and risk.

### 4.3. Cost management

Determination expenses and cost calculations are presented in Tables 2 - 8.

Cost analyse include the followings:

I. Calculation of fixed and variable unitary cost ( $Cv_u$ ) according to Table 2.

$$CF = 14316 \text{ lei}; \quad CV = 25046 \text{ lei}; \quad Cv_u = 25046/11200 = 2.23 \text{ lei}$$

Table 2. Centralization of expenses in the first year

Type of expense	Type of cost			
	Cd	Ci	CF	CV
Packaging	9152			9152
Raw materials		14579		14579
Consumables		206		206
Depreciation		158	158	
Inventory items		185	185	
Utilities		308	180	128
Rent		2000	2000	
Wages		11193	11193	
Collaborators		1608	600	1008
TOTAL	9152	30237	14316	25046
TOTAL costs	39389		39389	

Table 3. Calculation of direct unitary cost (Cd) first year- method of simple division

Product	Quantity[pcs]	Amount[lei]	Cd [lei]
SNM 0.5	6400	2688	0.42
SNM 1.0	3200	1664	0.52
SNM 2.0	1600	4800	3.00
TOTAL direct costs		9152	

Table 4. Calculation of indirect unitary cost first year- method of sharing coefficients

Type of expense	Amount to be share [lei]	Criterion for sharing
Raw materials	14579	Consumption of raw materials
Consumables	206	Consumption of raw materials
Depreciation	158	Consumption of raw materials
Inventory items	185	Consumption of raw materials
Utilities	308	Consumption of raw materials
Rent	2000	Quantity
Wages	11193	Quantity
Collaborators	1608	Revenue

Table 5. Calculation of indirect unitary cost - Consumption of raw materials criterion

Product	Total cost under criterion[lei]	Specific consume[l]	Sharing coefficient	Equivalent amount [pcs]	Equivalent unit cost [lei]	Unit cost $Ci_1$ [lei]
SNM 0.5	15436	0.5	0.25	1600	3.21	0.80
SNM 1.0		1	0.5	1600		1.61
SNM 2.0		2	1	1600		3.21
TOTAL	15436			4800	3.21	

II. Calculation of safety coefficient of sales is made only for the first year, on both scenarios: hopeful (targeted sales) and pessimistic (50% of targeted sales). In the next years is expected to improve.

$$\text{Average selling price } \bar{P} = 67200/11200 = 6 \text{ lei}$$

$$\text{Production in the breakeven point } Q_{min} = 14316/(6 - 2.23) = 3797 \text{ pcs.}$$

$$\text{Turnover in the breakeven point } CA_{min} = 3797*6 = 22782 \text{ lei}$$

Safety coefficient of sales calculated on the two scenarios:

$$K_s = CA/CA_{\min} = 67200/22782 = 2.9 \text{ (hopeful);}$$

$$K_s = CA/CA_{\min} = 33600/22782 = 1.47 \text{ (pessimist).}$$

III. Calculation of minimum average selling price that the business can sustain (Table 9).

IV. Efficiency indicators of sales, production, earnings and profitability in the hopeful scenario (Table 10).

Table 6. Calculation of indirect unitary cost – Quantity criterion

Product	Total cost under criterion[lei]	Specific consume[l]	Sharing coefficient	Equivalent amount [pcs]	Equivalent unit cost [lei]	Unit cost $C_{i2}$ [lei]
SNM 0.5		6400	4	25600		1.57
SNM 1.0		3200	2	6400		0.79
SNM 2.0		1600	1	1600		0.39
TOTAL	13193	11200		33600	0.39	

Table 7. Calculation of indirect unitary cost – Revenue criterion

Product	Total cost under criterion[lei]	Specific consume[l]	Sharing coefficient	Equivalent amount [pcs]	Equivalent unit cost [lei]	Unit cost $C_{i3}$ [lei]
SNM 0.5		25600	1.33	8512		0.154
SNM 1.0		22400	1.17	3744		0.136
SNM 2.0		19200	1	1600		0.116
TOTAL	1608	67200		13856	0.116	

Table 8. Calculation of unitary costs ( $C_u$ )

Product	$C_d$	$C_{i1}$	$C_{i2}$	$C_{i3}$	$C_u$
SNM 0.5	0.42	0.80	1.57	0.154	2.94
SNM 1.0	0.52	1.61	0.79	0.136	3.06
SNM 2.0	3.00	3.21	0.39	0.116	6.72

Table 9. Minimum average selling price

$P_{\min}$	First year	Second year	Third year
Hopeful	39389/11200 =3.5 lei	43588/11670 =3.7 lei	48462/12253 =3.95 lei
Pessimist	39389/5600 =7 lei	43588/7000 =6.2 lei	48462/8577 =5.65 lei

Table 10. Efficiency indicators

Indicators	UM	Year 1	Year 2	Year 3
Turnover	lei	67200	69900	80700
Value added	lei	39162	38220	44796
The rate of value added in turnover	%	58.3	54.7	55.5
The rate of material expenses in value added	%	61.1	70.7	68.3
The rate salary expenses in value added	%	28.6	30.7	27.7
Operating result	lei	31762	30805	37381
The rate of result in turnover	%	41.4	37.6	39.9
The rate of result in operating assets	%	139.7	146.1	200

Investments management indicators and risk management indicators are presented in Tables 11 and 12, respectively.

Table 11. Investments management indicators

Indicator	UM	Year 1	Year 2	Year 3
Working capital (FR)	lei	28457	52455	81431
Rate of investment in working capital ( $R_i$ )	%	0.77	0.42	0.27

Table 12. Risk management indicators

Indicator	UM	Year 1	Year 2	Year 3
Operating leverage coefficient (CLE)	lei	1.51	1.67	1.61
Financial leverage coefficient (CLF)	lei	1	1	1
Total leverage coefficient (CLT)	lei	1.51	1.67	1.61

Given the risk assumed by no fulfilling income (pessimistic scenario), the minimum operating lever is set at 1.5 in the first year, 1.4 the next year and 1.3 in the third year.

#### 4.4. Conclusions of analyse

- direct costs have a significant share in the cost of manufacturing the product BIB (45%) and lower for products packaged in PET; effective management of acquisitions is recommended to BIB packaging, purpose of minimizing the purchase price;
- to the SNM 0.5 product, the determining factor in the cost of production is the number of pieces manufactured/sold, its share being 53%; it is recommended to streamline the sales towards achieving the expected levels;
- to the SNM 1.0 product, the determining factor in the cost of production is consumption of raw materials (53%); minimizing the purchase price of raw materials (apples) is recommended;
- the safety coefficient of sales in the first year, even the pessimistic scenario, is good and offers good prospects of achieving profits;
- in first year, in the pessimistic scenario, the minimum selling price is above the expected level which gives a negative perspective on profits. Situation improves in the next year when the two prices equalize and provide insight definite profit in the third year when the minimum sale price is below the expected. Promotions actions is recommended to approach the hopeful scenario;
- although cost efficiency decreases slightly in the second year, as result of maintaining sales prices from the first year, the situation is not worrying in terms of business profitability which is assured to minimum income representing 59% of the estimated;
- commercial profitability (rate of result in turnover) decreases slightly in the second year but resume their upward trend in the third year. In the first year, its value is higher in the optimistic scenario (41.4%) and minimum (5%) at 60% of the estimated sales level;
- economic profitability (the rate of result in operating assets) is high and rising; business is profitable in terms of heritage, the benefit-investment relation being encouraging;
- investment management is good and do not require external sources of financing. Business allows, in the optimistic scenario, the accumulation of working capital available for future investments;
- operating leverage is favourable, in the hopeful scenario, even from the first year. In the absence of external capital, financial leverage has no effect. In these circumstances, the risk of insolvency is low, business being financially stable;
- business is sustainable from a financial standpoint, the growth potential being ensured under stable financial balance and minimal risk.

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