USE OF THE COST/VOLUME/PROFIT ANALYSIS IN TERMS OF EARNINGS

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Abstract

Given the presented risks and competition situations, company management needs management accounting, and is intended to help managers in the decision-making process. Due to the diversification of the production and sale activities, there has become imperative, from the perspective of company organization, operation, equipment and even earnings and costs, an alternative to the full costing method. This is the direct costing method used to calculate costs, which is based on those costs that are closely and directly connected to the operation volume. This method is actually more than a cost calculation method; it is a short-term earnings calculation method, which makes these costs a useful company management tool.

This paper is used to explain, by means of concrete examples, the way in which operation conditions changes influence the earnings estimated by means of the cost-volume-profit analysis, as well as the implications of these changes on the decisions to make.

Key words: cost, profit, decision, process

Introduction

Cost-Volume-Profit (CVP) analysis is important for any company to be able to find out break-even points, and determining short term decisions. Arguably, for small businesses, nothing could be more important, as CVP provides the minimum volume of a product needed to sell, in order to practice neither a gain nor loss. For entrepreneurs it is important to be effective and efficient when utilizing CVP bookkeeping processes. This provides the structure for analyzing CVP's importance to entrepreneurs.

The Cost–Volume–Profit (C–V–P) analysis is the analysis of the cost evolution models, which points out the relations between cost, production volume and profit. The C– V–P analysis is a useful forecasting as well as managerial control tool. The method includes a set of problem solving techniques and procedures, based on understanding the characteristics of company costs evolution models. The techniques express the relations between income, sales structure, costs, production volume and profits and include breakeven point analysis and profit forecasting procedures. These relations provide a general economic activity model, which may be used by managers to make short-term forecasts, to assess company performance and to analyze decision-making alternatives.

Margin of Safety as it narrate to cost-volume-profit dealings the difference between real sales and the break-even point. Margin of safety make possible management to find out allowable sales risk when introducing new products. The margin of safety find out the amount that sales can reduce before break even or operating at a loss; this results in the estimated variance for a company's sales relate to its break-even point. as of an analysis point of view, the larger the margin of safety, the greater the loss in sales an entrepreneur's company can bear.

Review of Literature

Defined, cost-volume-profit analysis is "the study of the effects of changes in cost and volume on profits" (Kimmel, 2011). CVP is critical in profit planning, determining selling prices, and helps determine the minimum number of future sales. Underling CVP are the assumptions that both cost and revenues are linear, costs can be classified as either fixed or variable, and one changes in activity or volume affect costs (Kimmel, 2011). CVP helps entrepreneur's asses how much

Index Copernicus(ICValue: 6.14), Ulrich, DOAJ, BASE, Google Scholar, J-Gate and Academic Journal Database.

contribution is made on each product and how many units to sell in order to cover fixed costs. "[CVP] can [also] be used to determine whether efforts would be better directed toward the reduction of fixed costs or of variable costs" (Crowningshield, 1986).

Impact on earnings after changes of the operation conditions:
Economic entity may use the COST-VOLUME-PROFIT ratio to recognize the business environment of the future managing period and to control their operations. These estimate, including changes of the sale price, the amount of manufactured and sold goods, the variable production costs, the variable sale costs, the fixed production costs and the fixed sale and administration costs, as well as their implications, will be analyzed by the company manager bearing in mind the data. (shown in table no. 1) and they refer to the following possible situations.

Table no. 1 – Calculation process constituents

No.	Explanations	Amount (pieces)	Price/unit cost (price/unit)	Total (price)
1	2	3	4	5
a.	Turnover	32,000	5.50	176,000
b.	Variable production costs	32,000	2.30	73,600
c.	Variable sales cost	32,000	1.40	44,800
d.	Total variable cost	-	-	1,18,400
e.	Variable cost margin	-	-	57600
f.	Fixed production cost	-	-	31,825
g.	Fixed sale and admin. Cost	-	-	12,000
h.	Total fixed cost	-	-	43825
i.	Earnings before tax	-	-	13775

1. ***Changes on the production costs***, by the 10% increase of the variable production cost and 5% increase of the fixed production costs. The data shown in table no. 2 after calculation.

Table no. 2 Changes on the production costs

No.	Explanations	Amount (pieces)	Price/unit cost (price/unit)	Total (price)
1	2	3	4	5
a.	Turnover	32,000	5.50	1,76000
b.	Variable production costs	32,000	2.30	80960
c.	Variable sales cost	32,000	1.40	44800
d.	Total variable cost	-	-	1,25760
e.	Variable cost margin	-	-	50240
f.	Fixed production cost	-	-	32779.75
g.	Fixed sale and admin. Cost	-	-	12,000
h.	Total fixed cost	-	-	44779.75
i.	Earnings before tax	-	-	5460.25

The implications of these estimates, namely only the increase of the fixed and variable production costs, without changes of the sale price or the amount of manufactured and sold good, are the profit that is lower by 8314.75 lei (13775 – 5460.25 lei). Thus, in order to fight production costs increase, the company manager may need to increase the sales price or to request other estimates from some specialists.

1. Changes to all the categories of costs, namely the 10% increase on variable production cost, 5% on variable sales cost and the 3% increase on fixed costs.. Table no. 3 shows the calculation.

Table no. 3 Changes to all the categories of costs

No.	Explanations	Amount (pieces)	Price/unit cost (lie/unit)	Total (lie)
0	1	2	3	4
a.	Turnover	32,000	5.50	1,76000
b.	Variable production costs	32,000	2.53(2.30*1.10)	80960
c.	Variable sale cost	32,000	1.47(1.40*1.05)	47040
d.	Total variable cost	-	-	128000

e.	Variable cost margin	-	-	48000
f.	Fixed production cost	-	-	32779.75(31825*1.03)
g.	Fixed sale and admin. Cost	-	-	12,000
h.	Total fixed cost	-	-	44779.75
i.	Earnings before tax	-	-	3220.25

These estimates, consisting of the change of all the categories of variable and fixed costs, show an even lower profit, of only 3220.25 lei, that is a decrease by 10554.75 lei (13775 lei – 3220.25 lei) as compared to the original situation. Thus, the company manager need to adjust the estimates by changing the amount both, manufactured, sold goods and the sale price. Changes to the amount of manufactured and sold goods and to all the categories of costs, namely, on the one hand, by the 8% increase of the amount of manufactured and sold goods expressed in physical units and by the 15% increase on all variable costs,

Table no. 4 Changes to the amount of manufactured and sold goods and to all the categories of costs

No.	Explanations	Amount (pieces)	Price/unit cost (lie/unit)	Total (lie)
1	2	3	4	5
a.	Turnover	34560	5.50	1900,80
b.	Variable production costs	34560	2.64	91,238.40
c.	Variable sale cost	34560	1.60	55296
d.	Total variable cost	-	-	146534.4
e.	Variable cost margin	-	-	43545.6
f.	Fixed production cost	-	-	30820.5
g.	Fixed sale and administration cost	-	-	10 800
h.	Total fixed cost	-	-	41620.5
i.	Earnings	-	-	1925.1

This prognosis is the most pessimistic of all, since despite the increase of the amount of manufactured and sold goods there is a decrease in variable cost margin of 140544 lei (57600 lei – 43545.6 lei). Therefore, the profit suffers the most, as it decreases to 1925.1 lei, which means a decrease by11849.9 lei (13775 lei – 1925.1lei).If all these prognoses are considered correct, a set of actions have to be taken to increase the sale price.

Changes to the sale price, the amount of manufactured and sold goods and the sale costs, namely by a 10% increase of the sale price, which would lead to a demand decrease of 8%. Also, the amount of manufactured goods will decrease by 3%, the variable sale costs by 12%, and the fixed sale and administration costs will increase by 12% (see table no. 5).

Table no. 5 Changes to the sale price, the amount of manufactured and sold goods and the sale costs

No.	Explanations	Amount (pieces)	Price/unit cost (lie/unit)	Total (lie)
1	2	3	4	5
a.	Turnover	31040	6.50	201760
b.	Variable production costs	31040	2.30	71392
c.	Variable sale cost	31040	1.23	38179.2
d.	Total variable cost	-	-	109571.2
e.	Variable cost margin	-	-	92188.8
f.	Fixed production cost	-	-	31825
g.	Fixed sale and admin. Cost	-	-	10560
h.	Total fixed cost	-	-	42385
i.	Earnings before tax	-	-	49803.8

The calculations in this table (table no. 5) show that our estimations led to the most optimistic prognosis, namely:

- The profit increases by 36028.8lei (49803.8 lei – 13775 lei);

- The total income increases by 25760lei (201760lei – 176000 lei), although the increase of the sale price diminished the market demand from 32 000 pieces to 31040 pieces;

Table no. 6 comparison between the four prognoses

No.	Explanations	200N	Prognosis I	Prognosis II	Prognosis III	Prognosis IV
1	2	3	4	5	6	7
1.	Turnover	176,000	1,76000	1,76000	1900,80	201760
2.	Variable production costs	73,600	80960	80960	91,238.40	71392
3.	Variable sale cost	44,800	44800	47040	55296	38179.2
4.	Total variable cost	1,18,400	1,25760	128000	146534.4	109571.2
5.	Variable cost margin (1-4)	57600	50240	48000	43545.6	92188.8
6.	Fixed production cost	31,825	32779.75	32779.75 (31825*1.03)	30820.5	31825
7.	Fixed sale and administration cost	12,000	12,000	12,000	10 800	10560
8.	Total fixed cost	43825	44779.75	44779.75	41620.5	42385
9.	Earnings before tax	13775	5460.25	3220.25	1925.1	49803.8

In order to made the decisions be relevant, the COST-VOLUME-PROFIT analysis should be used only if the company meets the following requirements:

- The specialists' estimates on the business environment of the following year should not exceed the relevant time interval;
- The physical volume of sold goods should be equal to that of the manufactured goods, to prevent the impact of stock variation;
- The production capacity should be known and unchanging during the analyzed management period;
- The goods sale structure should remain unchanged throughout the analyzed period;
- The costs should be divided into fixed and variable costs, and their evolution should be established with great accuracy for that period;
- The three ratios: turnover, variable costs and variable cost margin, should undergo a proportional evolution with the physical volume of manufactured and sold goods. If the sale price remains uncharged throughout the reference period, one may consider proportional the variable cost margin and variable costs.

If one or more of these requirements are not met, or if any of these assumptions is missing, the C–V–P analysis may be inaccurate.

Conclusion

To conclude with, separating fixed and variable costs helps gathering relevant cost related information useful in short-term decision-making, such as, for instance, profit estimate for the following time interval. We could therefore say that prognoses of the production, sale and administration costs and of the future income of the various business
units of a company, as well as the use of decision-making techniques based on relevant costs are possible only by a variable costs system approach, since profit is often inaccurately shown in a full costing system.

All these profit estimates were performed considering a safe business environment: the decision maker was familiar with the environment affecting his/her decision. However, the sales level does not depend on the decision makers will, but on the market. Therefore, the breakeven point analysis is increasingly required in an uncertain, risky environment.

The limitations of the C-V-P analysis in estimating profit would be the following:

- The information provided by this analysis are accurate from the mathematical viewpoint, however there are many instances proving that costs are never absolutely fixed or proportional to the turnover;

- This analysis provides very simple solutions, however, this simple model and information processing procedures are mostly due to our simplification of reality.

Thus, the problem of the reliability of these measures arises: is this information useful for a minimum level of profitability?

Finally, the C–V–P is useful since it offer an overall image of the company management. For forecasting purposes, management may use C–V–P analysis to calculate the profit yield by a given amount of sold goods. Or, based on the C–V–P analysis, the management may set the necessary sales level to earn the desired profit. Moreover, C–V–P analysis is increasingly used in the budgeting process.

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