

Improving the CVP-Analysis as a Tool for Management Decision-Making

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Temirkhanova Mutabar Jurayevna–

DSc, professor at the department Accounting at the Tashkent financial institution
mutabarchik@mail.ru, +998998341786

Karimov Akram Abbasovich

DSc, professor at the department Accounting at the Tashkent financial institution
mutabarchik@mail.ru,

Rizaev Nurbek Kadirovich

DSc, professor at the department Accounting at the Tashkent financial institution
mutabarchik@mail.ru,

Ochilov Ilyos Keldiyorovich

Phd, professor at the department Accounting at the Tashkent financial institution
mutabarchik@mail.ru,

Isokhudjaeva Munira Yashnarovna

associate professor of the Tashkent branch
of the Russian Economic University named after G.V. Plekhanov,

Annotation

In the article there considered foreign experience in the development the methodology of the analysis, based on management decisions and based on the CVP-model. The research questions are also revealed due to the theoretical and methodological substantiation of the problems of using the analytical tool “CVP-analysis” in the practical activities of tourism enterprises and organizations of various forms of ownership and legal forms in this industry. The operational level of management accounting is based on the following principles: speed (rapid response to deviations from given parameters), internality (assessment of the effectiveness of internal processes), stability of the relevant period (short-term economic environment), optimality (efficient use of limited resources), financial metrics (data clearly show the direct impact on the amount of benefits and expenses), analytical and accurate.

Strategic management accounting consists of matrix analytical tools, algorithms for working with "strong" and "weak" signals, scenario analysis, SWOT-analysis, GAP-analysis (interval analysis), portfolio analysis (distribution of activities on specific strategies related to products and markets), uses quality value creation analysis for the customer, product life cycle cost calculation, target cost calculation, investment calculation calculations, balanced system of indicators, and so on.

Means of effective implementation of tactical and operational management calculations are: financial analysis of performance indicators, statistical and dynamic tools of investment calculations,

budgeting, functional value analysis (FQT), cost accounting and costing tools, standard costing, direct costing, indirect cost analysis, CVP analysis, ABC analysis and so on.

Of these important tools in the effective organization of management accounting, the role of a balanced system of indicators and budgeting is invaluable. They apply to all levels of management, from the strategic level to the operational level. They solve many management problems, provide a systematic assessment of the economic activity of the US, provide an opportunity for economic evaluation, and provide feedback (providing analytical data at all stages of the management process).

Keywords

analysis, breakeven contribution to cover, costs, volume of production, Management Decisions.

1. Introduction

The relevance of the research topic is due to the fact that the economic analysis carried out according to the model "Cost-volume of production-price" allows us to determine the minimum volume of production necessary to achieve break-even activity. There is no doubt that the topic under consideration was often considered in various literary sources, however, authors of publications, for example, reveal the basic foundations of this analysis, not paying attention to decision-making on the basis of this analytical tool. In sufficient detail, this problem is considered in the publication. Moreover, in educational and methodological literary sources, as a rule, a detailed algorithm for constructing a break-even schedule is not presented, which negatively affects the perception of their content, especially by students studying independently, including on distance and distance learning.[1]

The issues concerning theoretical foundations of formation of e-commerce system and entrepreneurship in the sphere of information and communication technologies have been studied in the works of such foreign scientists and economists as N. Vulkan, G. Duncan, D. Kozie, M. McCartney, L. Mitchell, A. Sammer, T. Wilson and others.

These problems, organizational and economic issues in e-commerce have been studied in the works of the following scientists as I.T. Balabanov, L.E. Varakin, N.I. Gerashchenko, A. A. Kantarovich, O. A. Kobelev, G. Ya. Rezgo, L. D. Reiman, V. I. Skiba, I.V. Uspensky, V.V. Tsaryov in near-abroad countries.[3,4]

In the Republic of Uzbekistan the issues of structural transformations and development of the sphere of tourism and accounting have been investigated by A.N. Aripov, R.I. Isaev, A.A. Dzhurabaev, Kh.A. Mukhitdinov and L.I. Shibarshova. The issues of theory and practice in e-commerce have been researched in the works of R.I. Isaev, T.K. Iminov, Kh.A. Mukhitdinov. M.M. Yuldashev considered conceptual instrument of the essence of e-commerce system as well. The questions of electronic documents circulation and digital subscription are investigated in the works of R.I. Isaev, P.F. Khasanov, Kh.P. Khasanov and others. Practical examples of econometric analysis in the sphere of ICT have been studied and suggested in the works of S.V. Chepel and L.I. Shibarshova. The works of R.I. Isaev, M.M. Karimov, R.Kh. Khamdamov, Kh.P. Khasanov and others can be marked out among special studies devoted to the information security.

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Scientists-economists studied basic theoretical principles of formation and development of accounting, auditing, elaborated scientific foundation for the improvement of analysis, prepared the source for their further implementation. Among special studies devoted to information security, there can be singled out the works of R.I.Isaev, M.M.Karimov, R.Kh. Khamdamov, Kh.P. Khasanov and others. The works of M.A. Makhkamova, R.I.Isaev, T.M. Butkeeva are among them as well.[5]

However, conducted research on the development of electronic commerce showed that some aspects of this issue have not been studied enough despite their versatility and depth.

2. Methodological principles of the organization and functioning of electronic commerce system

The scientific novelty of this study is due to the theoretical and methodological substantiation of the problems of applying the analytical tool “CVP-analysis” in the practical activities of tourism enterprises and organizations of various forms of ownership and legal forms in this industry.[6] The practical significance of the article is due to the fact that its content can be used by specialists in economics in practical activities and students studying in various areas of professional training at various levels of education in solving situational problems in the field of enterprise cost management and other areas.

$$Q_{кр.} = \frac{З_{пост}}{Ц - З_{перем\ уд}} \quad (1)$$

Where:

Q_{кр.}- critical volume of production in physical or monetary terms;

З_{пост}- Fixed costs attributable to the entire volume of production for a certain period (month, quarter, year), soum;[7,8]

Ц – unit price, soum;

З_{перемуд.}-variable costs per unit of output.

$$Q_{кр.} = \frac{З_{пост}}{1 - \frac{З_{перем\ уд}}{Ц}} = \frac{З_{пост}}{\frac{З_{перем\ уд}}{B}} \quad (2)$$

Where:

B – Revenue from sales of products, soum .;

З_{перем}–variable costs attributable to the entire volume of production, sum.

Formula (1) allows you to determine the threshold of profitability (break-even point) in physical terms (kg, pcs.), In order to determine the volume of production in monetary terms, the value of the indicator obtained using this formula should be multiplied by the unit price of the product.

Formula (2) is more universal, it allows you to determine the value of the profitability threshold (break-even point) immediately in monetary terms. The considered formula can be presented in two forms: the first option is based on the same data on which formula (1) is built, the second option is applicable in situations where there is no data on the price of a unit of production, the value of

variable costs per unit of production. These situations are encountered in the analysis of summary indicators of a business plan, data on a financial performance report, provided that, in accordance with the accounting policy of the enterprise, summary data on expenses is grouped separately for fixed costs, separately for variables.

We believe that the presented formulas (see, formulas 1 and 2) are not objective enough to obtain the analytical information necessary for making managerial decisions.

The disadvantage of the presented formulas is the fact that they allow determining the volume of production and sales of products only when the breakeven point is reached. The essence of the presented formulas is that with their help the volume of production is determined at which fixed costs are fully paid off. However, in the practical activities of enterprises and organizations there are situations in which it is necessary to determine the volume of production and sale of products sufficient to receive a certain amount of profit from sales or profits from the main business activities of an economic entity. In this regard, it is necessary to supplement the formulas presented with such an indicator that allows you to determine the volume of production at which not only fixed costs are paid off, but also the planned volume of profit from sales is formed.[2]

The contribution to the coverage can serve as this indicator. This indicator is intended to summarize data on the value of fixed costs and profits from sales of products. The formula to determine the value of this indicator is presented below:

$$\text{ВКЛпокр} = \text{ПРмарж} = \text{В} - \text{Зперем} \quad (3)$$

$$\text{ВКЛпокр} = \text{Зпост} + \text{ПРреализ} = (\text{Ц} - \text{Зперем} - \text{уд}) \cdot \text{Q} \quad (4)$$

Where:

ВКЛпокр – contribution to coverage;

ПРмарж – margin profit;

ПРреализ – profit from sales;

Q – production volume.

There are several alternative options for determining the value of the “Contribution to Coating” indicator; these calculation methods are presented in formulas (see formulas 3.4).[9]

For situations in which the volume of production and other parameters are specified, it is necessary to determine the value of the unit price of the product, the value of total costs or the value of unit variable costs, the following formulas are used (see formulas 5,6,7):

$$\text{Ц} = \text{Зперем} + \frac{\text{ВКЛпокр}}{\text{Q}} = \text{Зперем} - \text{уд} + \frac{\text{ПРреализ} + \text{Зпост}}{\text{Q}} \quad (5)$$

$$\text{Зпост} = \text{Q} * (\text{Ц} - \text{Зперем} - \text{уд}) + \frac{\text{ПРреализ}}{\text{Q}} \quad (6)$$

$$\text{Зперем} - \text{уд} = \text{Ц} - \frac{\text{ВКЛпокр}}{\text{Q}} = \text{Ц} - \frac{\text{ПРреализ} + \text{Зпост}}{\text{Q}} \quad (7)$$

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Opening the methodology for breaking even, it is necessary to introduce the following conventions: A - the value of fixed costs for the period (year, quarter, month); B – Specific variable costs (variable costs per unit of output); C– Production volume, pcs .:[10]

The content of the presented analysis methodology is not exhaustive and can be expanded and detailed in accordance with the goals and objectives of the analytical activity of the enterprise.

D – Unit price Soum.

E – Volume of sales, pcs.

As a rule, in tasks of this type, the volume of production (C) is taken equal to the volume of sales. However, in practice, there are situations when the company manages to realize a smaller volume of products than was produced. Or vice versa - an enterprise can produce a certain volume of products for a period, sell it in full, and also realize part of the balances at the beginning of the period.[11]

To plot the graph, take the following initial data:

A– 36040souv / year

B – 43 soum.

S – 1305pcs

D– 75sum / pcs.

E– 1300pcs.

In order to build a break-even chart, we present an auxiliary table:

3. Results

Based on this graphical method for solving the problem of breaking even, it can be concluded that the organization will break even with the sale of 1126 units of production and receipt of revenue in the amount of 84,468.75 soums.

Also, in the framework of the analysis under consideration, such indicators as the stock of financial stability (strength), profitability of products, profitability of sales, and operating leverage are examined: the values of indicators and their dynamics in the reporting period are estimated in comparison with the previous and planned ones.

Table 1.Data for breakeven chart[12]

Indicator	Start point			End point		In accordance with the source data		
	Start point			End point				
X	Y	X	Y	X	Y	X	Y	
Fixed costs	0	A	C	A	0	36040	1305	36040
Variable costs	0	0	C	B*C	0	0	1305	56115
Total costs	0	A	C	A+B*	0	36040	1305	92155

				C				
Revenues from sales	0	0	E	D*E	0	0	1300	97500

Based on the data presented, it is possible to build a breakeven chart.

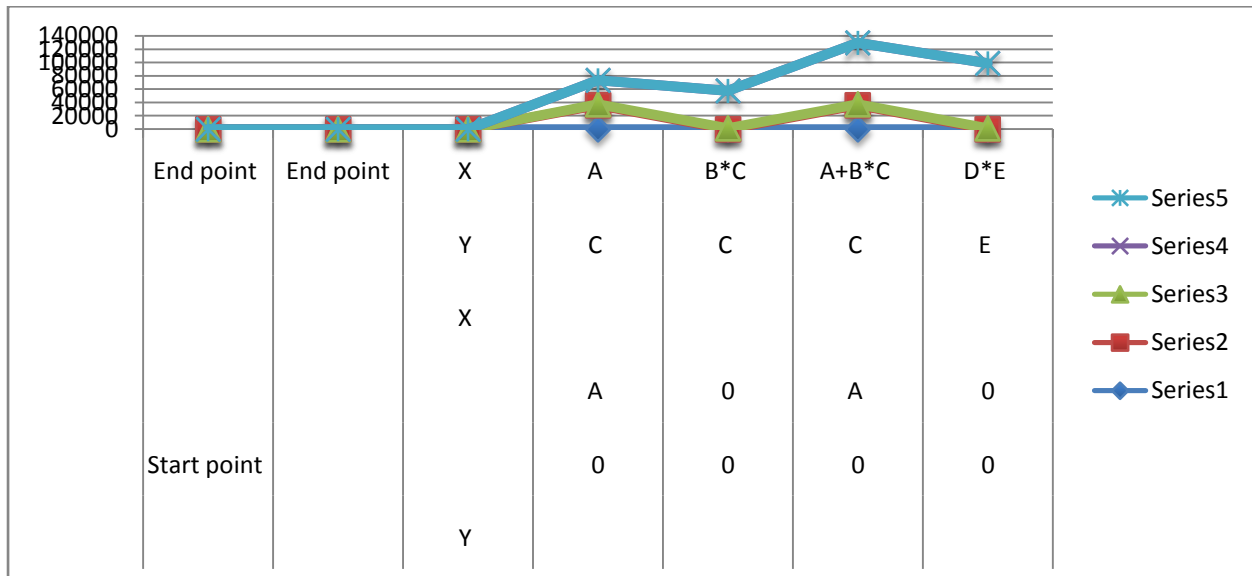


Fig. 1. Break even

Based on the analysis, the formation of measures aimed at optimizing the structure of the income and expenses of the enterprise, including those aimed at eliminating unreasonable expenses, is carried out. Accounting and analytical information serves as the basis for making managerial and financial decisions both within the organization and beyond.[13]

The content of the presented analysis methodology is not exhaustive and can be expanded and detailed in accordance with the goals and objectives of the analytical activity of the enterprise. The system of cost-benefit analysis is important not only for small businesses, but also for managers of large enterprises in making sound management decisions. This system examines the various factors that affect the relationship between costs, production processes, and financial results. This situation is characterized by the need for business managers to make decisions on regular sales prices, variable and fixed costs, the purchase of resources and their rational use.

CVP-analysis consists of key elements such as marginal revenue, profitability threshold (break-even point), production support, and marginal reserve of resilience.

Marginal income is the difference between the amount of revenue from the sale of goods (works and services) in enterprises and the cost of their production. In order to calculate the amount of revenue that covers fixed and variable costs, enterprises use indicators of marginal revenue volume and coefficient. The average amount of marginal revenue is the difference between the price of the product and the average variable costs. This indicator reflects the contribution and profit received to cover the fixed costs incurred in the production of the product.[14]

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The marginal revenue ratio represents the share of marginal revenue in product sales or the average share of marginal revenue in the price of a good. The break-even point (profitability threshold) is calculated using methods such as graphs, equations, and marginal revenue. Finding the break-even point (threshold of profitability) in a graphical way allows you to create a holistic graph "Cost - volume of production - profit".

4. Discussion of the results and conclusions

According to the analysis, the following can be seen:

Option 1 (per tourist product): provides an opportunity to earn an additional 700 thousand soums per month from the sale of additional tourist products. This will be used to cover fixed costs.

Option 2 (Break-even point): the sale of tourist products provides a margin of 700 thousand soums. In this case, the tourism enterprise will use the accumulated income of 21,000 soums to reduce fixed costs. Here, the size of 300 items determines the break-even point. The entity does not see a net operating profit or loss at the end of the reporting period.

Option 3 (Profitability): Increasing the number of tourist products by 200 will increase the total sales to 500. As a result, the company's income of 21,000 thousand soums will be used to cover fixed costs and will receive 14,000 thousand soums and a net operating profit. In the theory and practice of management accounting in developed countries, several methods of CVP-analysis are used. Scientific research on them shows that many formulas are used to determine the point of innocence and calculate the factors that affect it. At the same time, the practice itself requires the use of such a comprehensive convenient formula that it is necessary to ensure the interrelationship of all the estimates that make up the CVP analysis and to determine the impact of each factor in a more simple way.

The process of cost analysis of tourism products and services in tourism enterprises is studied as an integral part of management analysis. Management analysis is used to make clear management decisions based on the efficiency of economic processes in the activities of tourism enterprises and their internal database, which is known in the near future. The importance of this type of analysis can be determined by:

it will be possible to conduct a cost-effective management analysis of tourism products and services, evaluate more economic processes (study of the tourism market, supply and sale of tourism products and services) and their effectiveness (in quantitative and value terms);

in the management analysis of tourism enterprises it is possible to use not only the calculation of costs and cost estimates for tourism products and services, but also other (external) sources that affect it;

The analysis of the cost of tourist products and services is carried out mainly in the form of "know-how", which is divided into the ability to keep its data confidential.

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