

COST VOLUME PROFIT MODEL, THE BREAK -EVEN POINT AND THE DECISION MAKING PROCESS IN THE HOSPITALITY INDUSTRY

Briciu Sorin

University December 1st , 1918 Alba Iulia

Faculty of Sciences

Scorțe Carmen

University of Oradea

Faculty of Economics

Management accounting and cost calculation in the hospitality industry is a pathless land. The present article is a starting point of a long scientific approach on the domain of the hospitality industry and on the managerial accounting in this area.

Our intention is to put the spot light back on the thorny problem of applying Financial Accounting and specifically its implementation in the hospitality industry.

One aim of this article is to provide a picture of CVP analysis in decision making with customizing the hospitality industry. To cope with the crisis period, the competition and to achieve the expected profits of the hospitality industry ,managers have the possibility to apply CVP analysis, one of the most simple and useful analytical tools.

This paper will address the basic version of the CVP model, exemplifying the main indicators of the particular model for the hospitality industry that can help guide decision-making.

Keywords: CVP model, Break-even point, hospitality industry

JEL classification M41

Introduction

Hospitality industry is one of the most dynamic sectors of contemporary society with an increased role in the globalization process.

Tourism is an economic and social phenomenon characteristic of modern civilization, very rooted in society and therefore strongly influenced by its development. Addressing the large social segments and responding to their needs, tourism is by far a economical sector characterized by an increasing dynamism, manifested both nationally and internationally. Tourism rises to a vast human and material potential due to its content and complex character table, which has important implications for the development of national economies and society.

Tourism is a factor in individual and social equilibrium, a source of fulfillment for leisure time, developed in harmony with the human environment, natural and cultural resources to be placed in a context of sustainable development.⁵⁶²

Taking count of from the importance of tourism, the development prospects of the sector but given the current conjuncture and national economies affected by global economic crisis, maintenance and development of hospitality industry business entity requires harmonization of resources and market opportunities with their skills, foundation strategies cost information based on tourism products and services additional information on accounts, but taking count of the company's capabilities and balance with the environmental conditions.

Lack of coherent management strategy involves a weakness inherent in the management system benefits of providing costs. Awareness of benefits of providing quality services related to the right level of prices is not a common practice today.⁵⁶³

⁵⁶²Summary of processing of congress BITS, Naples, 14-18 june 2000, over of Theoretical and Applied Economics. Supliment. 29-31 mai 2009 ,Bucharest, pg 136

The tourism sector, regardless of market structure of interest covered by an economic entity (recreation and leisure tourism, spa tourism, business travel, tourism circumstance), key factors of success are:

- Differentiating their products from those of competitive interest in a more attractive environment afforded so, but not least your own offer competitive price / quality ratio. In Romania, because it applied the wrong policy in the hospitality industry on price quality ratio, the effects of policies currently exist through a customer orientation to market massive external interest;
- Diversification and complementary tourist services and submission of integrated products in the same package to ensure all facilities during the stay;
- Flexibility and adaptability of supply to demand trends
- Steady and sustained promotion of their products on the market, highlighting the defining characteristics that distinguish them from the competition.

Theoretical framework for the direct method and CVP model

Direct Costing method is based on the principle of separating variable costs from fixed costs according to behaviour change in production volume, and is charging only variable costs on products whether they are direct or indirect.

Originally, Direct - Costing's cost is composed only of the total costs that change directly with output (activity level) and not from direct costs as we could wrongly understand deducing from its name.

Thus, the name that best matches the Anglo-Saxon expression is the "variable cost method"⁵⁶⁴ or "variable costing". French Accountant General Plan 1982 also used the name "proportional cost method and some authors identify this marginal cost calculation method."⁵⁶⁵

Costing provides relevant information for the management team, and is useful in formulating economic entity's business decisions for the next period. This method will provide a basis for cost estimates to study the effects of planned changes in production volume, resulting from changes in economic conditions or open some management actions such as price changes, increase or decrease in stocks or special promotional activity.⁵⁶⁶

So the method focuses on boosting sales in that size does not allocate fixed costs on inventory (unfinished products, finished products), but must be covered by the sales of the period.. Also the emphasis is on analysis and attribution of the fixed costs and attributing the variable costs on the margin (gross).The manager has the obligation to return and maximize margin on variable costs over which fixed costs will be charged.The margin on variable costs (M / CV), also called gross profit or contribution limit is determined as the difference between gross turnover and variable costs associated with the entire production sold. The margin of variable costs is also called the global margin and it is the sum total margins on variable costs per product unit set (m / cv) multiplied by the associated production sold. The unit margin can be determined as the difference between the selling price and the unit variable cost of product j.

$$M/Cv = CA - CV; \quad CA = Qv \times pv \quad \text{and} \quad CV = Qp \times cv \Rightarrow R = Qv \times (pv - cv) - CF$$

Informational value of the margins in decision-making is subject to the following factors:

- Dividing the fixed costs and variable components must be fair and consistent;

⁵⁶³Larisa Dragolea, Radu Matei Todoran, Ensuring the quality of services by making costs effective in the management of rural tourist boarding houseswork presented at the International Scientific Conference "Challenges of a knowledge-based economy contmporane" II-nd Edition, ICMEA, Alba Iulia, 2009.

⁵⁶⁴ Sorin Briciu, *Theoretical and practical managerial accounting*. Publisher: Editura Economică, București, 2006, p 222

⁵⁶⁵ Dorina Budugan, Iuliana Georgescu, Ioan Berheci, Leontina Bețianu, *Management Accounting*, Publisher CECCAR, Bucharest 2007, p 358 (citation after Lucey, T., *Management Accounting*, 3rd Edition, D.P. Publications, London, 1992).

⁵⁶⁶ Sorin Briciu, citation pag 223.

- Rational use of uniform margins (gross contribution per unit) established as a basis for decisions in the sales policy, this requires constant variable costs per unit of product;
- For decisions regarding the selection of the production processes, the possibility of establishing variable cost (marginal) reference constant unit cost of places is required
- Turnover, variable costs and the margin on variable costs, are three major indicators used by the Direct - Costing method, they behave proportional with the quantities sold. Assuming that the sale price remains constant throughout the period in which the analysis is made, we could consider that the business margin and variable costs behave in proportion to the turnover.⁵⁶⁷

On the basis of the margins calculation we can establish which of the products manufactured and sold is able to cover the resume and ensures participation in CF, and which product is unsuitable and produces loss to the company. Each product is judged by its ability to cover non-distributed costs (fixed costs).

The management team of the entity can decide to stop production of goods which have produced loss to the company. The decision must be taken into account if the product can help to ensure the dissolution of other products, or if there is a new product whose manufacture and disposal has good prospects to increase profit⁵⁶⁸. We believe that in the hospitality industry we often find situations where a product conditions or contributes to the dissolution condition for others (demand for accommodation is conditional upon the existence catering unit, or the existence of bases for treatment and entertainment bring a significant contribution to the increase of outlets for lodging). This way of approach allows considering whether to remove or develop one or other product sales. But the rationale for decision making must analyze several factors, not just gross contribution in absolute size.

A powerful tool of analysis based on Direct Costing is the Cost-volume-profit analysis, one of the most effective tools that managers of an economic entity dispose of. Cost-Volume-Profit examines the behavior of total revenue, total costs and results of operations under the influence of changes in production volume, selling price, fixed costs or variable costs. Managers routinely use CVP analysis to answer questions such as: How will the total costs and revenues be affected if we sell 1000 units more than usual? How will the production level be affected if you raise or lower the sales prices? All these questions have a common topic: What would happen if ...?⁵⁶⁹

The CVP model proposed calculation and analysis of several indicators that will provide decision facets for the management team of specialized entities in the hospitality industry, information regarding the decisions of 'production' of products or packages and short term promotion. Cost calculation in direct-costing system should be organized to provide data to enable decisions based on marginal cost and coverage contributions⁵⁷⁰ but also on other indicators (break-even factor coverage, range safety, etc.)

The CVP model and decision making

As we mentioned before, the CVP model analyzes the evolution of total revenue, total costs and operating profit as are changes in production levels (in the general economic activity), the selling price, the unit variable cost and / or fixed costs of a product. From practical work we could find that the even the easiest CVP analysis is useful in making decisions regarding strategic planning and offers, regarding the features of the tourism package products, prices and tariffs offered.

⁵⁶⁷Carmen Mihaela Scorte, *Internal accounting management*, Publisher: Editura Universității din Oradea, 2005, pag 184

⁵⁶⁸Briciu Sorin, *Management assisted by cost calculation*, Publisher: Risoprint, Cluj Napoca, 2003

⁵⁶⁹Charles T.Horngren si colectiv, *Costurillor accounting, a management approach*, Publisher: Arc, 2006, pg 68

⁵⁷⁰ Klaus Ebbeken, Ladislau Possler, Mihai Ristea, *Calculation and cost management*, Publisher: Teora, Bucharest, 2000, pg 316

Competent economists say that in order to improve the performance of an economical entity in general, and to particularise, we will take the exemple of those from the hospitality industry, one of the first actions should be taken to improve organizational culture. If you have a culture that is not in concordance with the cost management and cost structure , or if you do not pay attention to the cost structure , you never get the results you want ⁵⁷¹ .

For the test result to be relevant we should take count of a series of constraints and limitation that have determined numerous critics from supporters of other ideologies . These restrictions include: knowing the exact cost behavior, relevant activity within the beach, all costs can be separated into fixed and variable costs, the analysis does not exceed the range of activity; variable costs that make the cost to grow proportionally with the output production fabricated and sold; input prices due not change during the period, so that appropriate costs record the progressive development of foreign business volume variation; production processes should be defined, known and not subjected to changes during the period of analyst, in the situation of obtaining more products it is required to observed and identificat: interdependencies between products, difficulties in product sales and their quantification as a linear dependency.

This type of analysis comes from the economic theory of costs, presented in Figure 1, Graph on which cost accounting analysis (Fig. 2) is a special case of the graph shown in Figure 1.

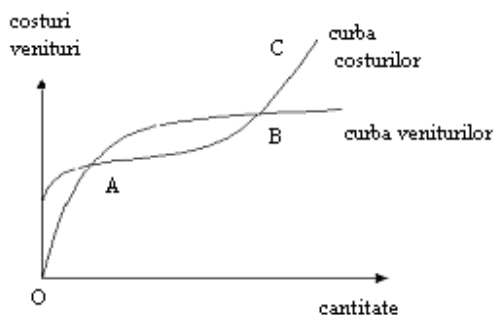


Fig.1: Economic reasoning of the cost-volume-profit analysis

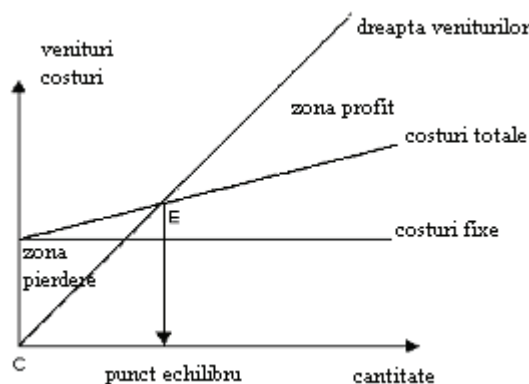


Fig. 2: Accounting rationament of the cost-volume-profit analysis

- OA: total costs exceed the revenues, the company is working in loss, since production capacity is fully used (to produce fewer products than is possible);
- AB: revenues exceed the costs (the profit), production capacity is used at a normal level
- BC: revenues exceed the costs (the loss). Production capacity is overloaded, producing more equipment than they were designed to do, there are breakdowns.

Basically, the economic model shows that there are two equilibrium points, B and C. Instead, the accounting model presents only one (point E). Accounting model is only a short-term picture of economic model is based on the concept of "relevant period" ("relevant range"), translated literature as a period of validity of the assumption of linearity.

Managers in the hospitality industry consider that the price competition in this area has the largest share a fixed cost. The issue will be at what level of "production" in the hospitality industry will the fixed costs be fully covered. The quantity of production sold for wich the total revenues equal total costs is called break-even, in other words, it reflects the amount of production sold so that the operating profit is zero. The management team of any entity is interested in the break-even as it reflects the minimum quantity of production that must be sold in order to not record losses.

⁵⁷¹ Anderson T, Elloumi F. Theory and Practice of Online Learning, Athabasca University, 2004, p.69-70
842

To determine the break-even (point of equilibrium critical point) the equation method is based on the formula is the result of which operate under:

$$RBE = CA - CV - CF \quad \text{and if} \quad CA = q \times p; \quad CV = q \times cv \Rightarrow RBE = q \times (p - cv) - CF$$

If the equilibrium gross operating result is zero previous equation becomes:

$$q(p - cv) = CF \quad \text{and production volume to achieve equilibrium point is} \quad q = CF / (p - cv).$$

But in the hospitality industry as we said, most of the costs are fixed, and "production" for housing units corresponds to the maximum accommodation. Therefore we think it would be appropriate to calculate the point of balance for each responsibility center or to calculate the point of equilibrium theory reporting the fixed costs to the average gross contribution.

$$P_{et} = CF / c_{bu} \quad \overline{c_{bu}} = \sum_{i=1}^n (Qv_i \times c_{bui}) / \sum_{i=1}^n Qv_i = Cb_{totala} / \sum_{i=1}^n Qv_i$$

In the given conditions in which an economic entity obtains and sells more products (such as travel and establishments) the breakeven structure is relevant. To get this structure it is necessary to calculate the volume of each bearer share in the total production cost, an index called specific gravity.

$$P_{ei} = gs_i \times P_{et} \quad \text{and} \quad gs_i = Qv_i / \sum_{i=1}^n Qv_i$$

The marginal contribution method is a variant of the previous method and we believe that the balance point is the turnover value for which the fixed costs are equal to the total contribution margin on variable costs (mv).

The unit margin on variable costs expresses increased profit earned by selling each additional unit of product. Thus, it will help cover the loss incurred by the entity until it breaks even, in time, each additional unit sold will increase profits. This affirmation holds a truth as long as the entity does not exceed the floor for which the fixed costs were determined⁵⁷².

Given that the equilibrium outcome is 0 value we can determined that the turnover achieving breakeven turnover called critical or break-even in monetary units according to the formula:

$$CA^* = CF / R_C \quad \text{and} \quad R_C = MV / CA \times 100 \quad \text{or} \quad R_C = Cb_{totala} / CA \times 100$$

But the fixed costs are relatively constant, so the gross operating margin result will change according to the variable costs per unit of product (mv) and by changing the quantity sold.

The margin on variable costs (gross contribution per unit) is calculated as the difference between selling price and unit variable cost and will contribute mainly to cover fixed costs which remain relatively constant in the range established and then cover up the profit or loss.

The break-even can be used to determine the physical volume of activity so as to achieve a profit (P))⁵⁷³. Calculation formulas:

$$\text{In physical units} \quad Pr_P = (CF + P) / CA^*; \quad \text{In monetary units} \quad CA_P = (CF + P) / R_C$$

With the point of balance or breakeven we can calculate the turnover required to achieve a certain rate of profit (profit / sales). If the management team of an economic entity aims to achieve and maintain the enterprise to a certain rate of profit, he may find that using the break-even volume of activity that ensures it. The calculation formula is: $CA_{RP} = CF / (R_C - R_P)$

In the CVP analysis other indicators such as: coverage factor, dynamic factor of safety, range safety, index sampling rate volatility and operating leverage should be taken in consideration as being of an significant importance.

The coverage factor (Fa) shows how many percentes of the sales volume are needed to cover the fixed costs and obtain profit. Entities in the hospitality industry need to focus they're

⁵⁷² Nadia Albu, Cătălin Albu, *Performance Management Tools*, vol 1, Publisher: Editura Economică, Bucharest, 2003, pg 206

⁵⁷³ Chirața Caraiani, Mihaela Dumitrana, *Accounting and Management Control*, Publisher: InfoMega, Bucharest, 2004, pg 161

manufacturing and selling policy with the highest coverage factor. Based on the coverage factor they can also calculate the selling price and the manager can take quick decisions and pricing policy.

Dynamic safety coefficient (Ks) shows how the revenue may decrease relative so that the entity can reach the equilibrium point. Any decrease in this ratio means that the entity is about to enter into losses.

The range of safety (IS), also known as distance or safety road shows how much can the entity afford to decrease its sales so that the unit does not enter in the area of financial losses.

Sampling index (PI) defines the percentage of turnover used to cover fixed costs, the company reaches break-even easier the lower its value is.

The purposes of any activity is to maximize the results by submitting a minimum of effort. Extent of such activity is the operational lever (Lo), which expresses how the assumption of fixed costs contribute to results. This indicator's value grows as the relationship between fixed and variable costs is higher.

Conclusions

Given the changing landscape, the hospitality industry is characterized by a dominant competitive logic, assuming a clear competitive advantage. There are several ways to create value, so there are many forms of competitive environment that have their own rules.

After identifying the competitive logic, the economical entity can adapt its strategy in an effective mode, Management accounting helps managers in the hospitality industry to organize existing and future businesses so as to assess, monitor and manage the future of the business and everything related to its economical stability.

As it has been already mentioned, CVP model allows the calculation of indicators for facets of decision-making, being useful to the entities of the hospitality industry, these indicators provide information on production decisions, selling, short-term promotion. Each of these indicators is particularly important, helping short-term management decision making, therefore we propose to analyze their influence and utility in future scientific research.

Bibliography

1. Albu Nadia, Albu Cătălin, *Performance Management Tools*, vol 1 si 2, Publisher: Editura Economică, Bucharest, 2003
2. Briciu Sorin, *Theoretical and practical managerial accounting*. Publisher: Editura Economică, Bucharest, 2006
3. Briciu Sorin, *Management assisted by cost calculation*, Publisher: Risoprint, Cluj Napoca, 2003
4. Budugan Dorina, Georgescu Iuliana, Berheci Ioan, Bețianu Leontina, *Management Accounting*, Publisher: CECCAR, Bucharest 2007, p 358
5. Caraiani Chirața, Mihaela Dumitrana, *Accounting and Management Control*, Publisher InfoMega, Bucharest, 2008
6. Dumitru Mădălina, Calu Daniela Artemisa, *Management accounting and cost calculation*, Publisher Contaplus, Ploiesti, 2008
7. Ebbeken Klaus, Possler Ladislau, Ristea Mihai, *Calculation and cost management*, Publisher Teora, Bucharest, 2000
8. Epuran Mihail, Băbăită Valeria, Grosu Corina, *Accounting and Management Control*, Publisher Economică, Bucharest, 1999
9. Horngren Charles T, Datar Srikant M, Foster George, *Cost accounting a managerial approach*, Publisher Arc, 2006
10. Horngren Charles T, Foster George, Datar Srikant M, *Cost Accounting*, Publisher Prentice Hall 2000

11. Kaplan, Robert S. and Bruns, W. *Accounting and Management: A Field Study Perspective* (Harvard Business School Press, 1987)
12. Moncarz Elisa S., Nestor De Portocarrero, Nestor de J. Portocarrero, Nestor De Portocarrero, *Accounting for Hospitality Industry*, Prentice Hall, New York, 2003
13. Scorțe Carmen, *Internal accounting management*, Publisher: Editura Universității din Oradea, 2005
14. Tabara Niculai, *Accounting and Management Control*, Publisher: Tipo Moldova, Iasi, 2004
15. Tabara Niculai, Horomnea Emil, Mircea Mirela Cristina, *International Accounting*, Publisher Tipo Moldova, Iasi, 2009
16. Weetman Pauline, *Financial and management accounting*, Prentice Hall, New York, 2006