LITERATURE STUDY: COST BEHAVIOR ANALYSIS

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Abstract

Currently there are many types of companies/businesses in Indonesia. Business people / business people are very interested in understanding the price structure. This study aims to explain the basic concepts in the evolution of conceivable cost behavior from theoretical and practical cost behavior. The writing of this article provides a complete picture of the concept of cost behavior studied based on the results of previous research. This research is a literature study with a descriptive research nature, using various written sources such as articles, books and documents relevant to this research. This literature review focuses on behavior-based cost sharing, which plays an important role in determining production costs for a business, including a company.

Keywords: Behavioral Costs, Fixed Costs, Variable Costs, Semi-Variable Costs

1. Introduction

In a business, it is necessary to manage the potential that is fed to generate profits, which have financial value [1]. Business management requires the sacrifice of resources to achieve profits and is usually valued in monetary terms referred to as costs [2]. Cost information is a valuable source of knowledge when valuing a company [3]. The company will always have a goal to develop its company and be at the forefront compared to competitors [4].

That way, managers can spend their valuable time managing the costs of running their business [5]. Managers not only consider current activities, but also consider the level of resources in the past [6]. Understanding enterprise costs is one of the most important tasks of effective cost management and represents a key area of enterprise performance [7].

However, in practice most managers do not have a solid foundation or footing in determining costs [2]. The cost of resource coordination becomes a complicated issue when managers have to determine the amount of resource capacity [6]. Good managers should learn to use information to make the right decisions [8]. One of them is cost estimation that can be used by management in realizing various business decisions, such as through product pricing, budget allocation policies, and the development of new business lines [9].

The identification and classification of costs based on their behavior requires in-depth understanding and requires final consideration from the management concerned [10]. Cost classification is the most important feature of cost analysis, where costs are classified into defined categories according to their characteristics [11].

Management accountants have traditionally focused on cost behavior as an important aspect of earnings analysis for managers [12]. Profit is the key to the company's survival [13]. Cost behavior involves manager spending based on sales [3]. Companies that are operating will explain that there are fixed costs and variable costs that arise from changes in the scope of business [14].

Companies can use cost behavior analysis to forecast future costs, perform sensitivity analysis, and determine cost and revenue scheme sizes [9]. Understanding cost behavior has business and economic value that provides direction for management [6]. Because cost is one of the most important issues in the company's financial management and company performance [11].

Based on the results of research conducted [15] and [16] found that a company does not categorize costs during the implementation of production such as setting variable costs, semi-variable costs, and fixed costs which can make it easier for companies to make decisions or evaluate costs at different activity levels. Just like the research done [17] even small and medium enterprises cannot practice correct analysis in terms of cost behavior due to their lack of knowledge of cost behavior.

2. Literature Review and Research Focus

*Cost behavior*is the way costs change that occurs due to changes in activity output [31]. Cost behavior studies are important because of their effect on operating risk levels, break-even points and safety margins, they can also be

applied to determine the difference between a labor-intensive cost structure and a technologically evolving firm's cost structure [18].

According to its behavior, costs can be categorized into three, there are fixed costs, variable costs, and semi-variable costs [4]. First, fixed costs are costs that remain constant over the range of output. These costs are incurred only over time and do not change as a direct result of changes in volume [19]. Second, variable costs, costs that usually change in direct proportion to the volume of activity [13]. Third, semi-variable costs are costs that have fixed costs and variable costs [26].

This research focuses on behavior-based cost sharing which will help companies/businesses in making a decision to determine the cost of production.

3. Research Method

This research is included in the type of descriptive research with a literature study approach by looking for theoretical sources related to the cases or problems encountered. Descriptive research according to [32] is research that aims to investigate a particular situation, situation or thing and present the results in the form of a research report. According to [33] states, literature study is a resume of articles, other documents, and books that explain past and present information and theories by dividing the literature into topics and required documents. The literature sources that we use are articles sourced from Google Scholar and literature books, both our handbooks and digital books.

4. Discussion

4. 1 Cost Behavior

Cost behavior (cost behavior) is the way costs change that occurs due to changes in activity output [31]. In the traditional model, the cost behavior of identifying costs can be divided into components of fixed costs and proportionally modified variable costs [7]. However, there are alternative perspectives on the long-run and short-run nature of cost behavior [11]. According to [18] the classification of these three cost categories is by no means sufficient to explain the behavior of a particular cost item.

These costs are classified against changes in sales activity based on the cost response [6]. Accuracy in identifying and classifying the types of costs will affect the level of efficiency in spending costs [4]. The company's ability to correctly identify fixed costs and variable costs is a success of the responsibility accounting system [11]. A proper understanding of cost behavior requires that it be linked to decisions [20].

According to [21] an introduction to cost behavior helps managers for four reasons, namely break-even analysis and contribution margin; as a flexible calculation; unit performance evaluation; and short-term selection. They must not only be able to understand the conceptual underpinnings of cost behavior, but they must also be able to apply these concepts to real-world data that does not always behave as expected [8]. Management will only determine costs to be fixed costs or variable costs. However, the form of analysis will be different if it has the characteristics of fixed, variable, and semi-variable costs [4].

Cost behavior will examine how the cost per unit and total costs change in line with changes in the output driver of the activity. Which if the output of the activity driver changes, there are 3 variables that must be observed, namely total cost, unit cost, and activity driver output [22]. As the number of units produced changes, so do the total costs of direct materials and direct labor [23].

Cost behavior is influenced by a number of factors including volume, price, efficiency, sales mix, and production changes. The effect of this cost behavior can be seen clearly in the cost-volume-profit relationship when using a break-even graph [19]. In CVP analysis we can find out several important things that can assist management in determining the number of units that need to be sold to determine the effect of reducing fixed costs at the break-even point, reaching the break-even point, and the effect of increasing prices on profits [22]. CVP accuracy is a function of the accurate classification of total costs into fixed and variable components [18].

4. 2 Fixed Costs

Fixed costs are costs whose total value remains constant when production changes, while fixed costs per unit change as production changes within the relevant limits [1]. The relevant limit or range is the range on the activity output that speculates that the cost relationship is considered valid for the company's operating activities [31]. The relevant range is the volume zone in which the behavior of variable costs, fixed costs and selling prices can be predicted with reasonable accuracy [21].

Fixed costs do not fluctuate with changes in the level of activity [8]. Because sales activity will not affect fixed costs [6]. The original nature of fixed costs is that they are difficult to change quickly, which is why they are said to be fixed. Examples of fixed costs include advertising costs, salaries, and depreciation [21]. Administration, sales, general employee salaries, and depreciation are components of the fixed costs that are larger than the variable costs associated with company assets [14].

Fixed costs are relatively more difficult to adjust during a decline in sales, so the company experiences an increase in the ratio of SG&A costs to sales. The higher the fixed component in a firm's cost structure, the higher the operating leverage of that firm. As a result, as sales increase, greater operating leverage will translate into greater profitability [5]. In research [24] said it is the fixed cost component that is responsible for the operating risk

of a company. When demand declines, firms should try to shift fixed costs to variable costs. With a reduction in fixed costs that is replaced by an increase in variable costs in the form of the purchase price that must be paid by the company to the outside industry [25]. This attribute of fixed costs is important to consider in assessing the scalability of a business proposition [8].

Table 1. Fixed Cost Data

Cost drivers	***Cost per unit***	***Total cost***
3,500	Rp98.000,-	IDR 3,456,000,-
3,000	IDR 84,000,-	IDR 3,456,000,-
2,500	IDR 56.000,-	IDR 3,456,000,-

(Data Processed, 2022)

From the table above we can see that the total cost is always constant, no matter how the activity level (cost driver) changes. Therefore, when the level of activity decreases, the fixed cost per unit increases. On the other hand, fixed costs for each unit of activity will decrease when the level of activity (cost driver) increases [3]. It is safer to use total fixed costs because sometimes fixed costs per unit can lead and lead to bad decisions [31].

The real costs incurred in the production process are total costs. While the concept of cost per unit in fixed costs is only a hypothesis, but is used for cost analysis purposes [9]. Fixed costs are reallocated from the department, or cost center that generated them [19]. There is an inverse relationship between fixed costs and units produced, where the lower the fixed cost per unit produced, the more units produced [26]. Companies with a high fixed cost component are more sensitive to changes in activity than companies with a low fixed cost component [18].

Companies especially manufacturing always incur or pay fixed costs when not producing or when production is running at maximum capacity, regardless of production volume [26]. According to [19] proponents of variable costs believe that fixed costs should be excluded from product costs because they interfere with certain decision-making procedures.

However, in practice, companies are often reluctant to incur fixed costs, this reflects that the company does not dare to take risks, causing the company to not be able to enjoy profits [16]. This is in contrast to what was conveyed in the research [4]. According to [4] the company can still stay in business even though it does not incur fixed costs, but for other components of fixed costs such as interest expense on long-term loans from banks it cannot be avoided and must be borne.

According to [31] fixed costs are divided into two, namely:

a. Discretionary fixed costs
   Is a fixed cost that can be changed or easier to avoid based on management policy [31]. These discretionary fixed costs are costs that reflect periodic allocations by management as determined during the budgeting process [19].

   Managers can adjust the amount or time frame of discretionary spending. Thus, discretionary spending is a display of managerial discretion [3]. Managers are also not committed to a certain level of spending and can increase or decrease as needed [19].

   These fixed costs are determined taking into account how the program and related programs are implemented [26]. Discretionary fixed costs can abruptly change a firm's operating risk and break-even point, because they are the result of a single management decision [18].

b. Committed fixed costs
   Are non-modifiable costs involving long-term [31] contracts. That is, this fee has been determined to be issued as a safeguard for the existence of the company [10]. In the short term, these costs cannot be eliminated even if operational activities are disrupted [15]. These fixed costs of commitments usually reflect capital budgeting decisions, such as taxes, property, insurance, and management salaries [19].

4. 2 Variable Costs

Variable costs are costs whose magnitude follows changes in the volume of activity [23]. This means that these costs will not appear if you do not carry out production activities [27]. This variable cost is a cost whose total value increases in proportion to an increase in activity, and vice versa, decreases inversely with a decrease in activity [10]. This cost has a close relationship between input and output, if the output increases it will increase the input and vice versa [4]. Costs can behave as variable costs when changes in the number of products produced cause the total costs incurred to change as well [9]. Variable costs in manufacturing companies can be defined as costs that are directly related to producing an item as well as costs that vary with the level of production activity [19].

Variable costs are generated by the production process and their value is closely related to the volume of production that follows to some extent changes in production volume [28]. As volume increases, this can reduce variable costs per unit [8]. For each resource, variable costs are a means of weighing the total time of the resources involved in the project [29]. These fixed costs and variable costs will together form the element of total cost that plays a key role in determining the profitability of running a business. Unlike fixed costs,

variable costs fluctuate when sales/production increase or decrease [10].

Fixed costs and variable costs are short-run concepts, but in the long run, all costs are variable [7]. Recently, the activity-based costing approach assumes that all long-term costs, including overhead costs, are variable [30]. However, in the short run, the department's operations manager must control for variable costs based on the level of production activity [19]. The longer the time horizon, the more likely the costs will be variable [13].

Table 2. Variable Cost Data

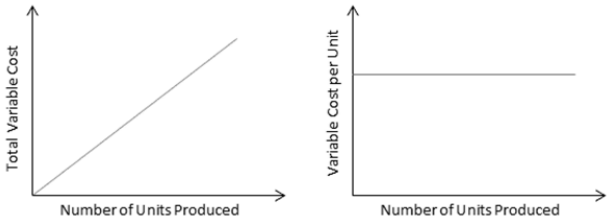
Cost drivers	***Cost per unit***	***Total cost***
7,000	Rp34,500,-	IDR 3,576,000,-
17,000	Rp34,500,-	IDR 4,578,000,-
27,000	Rp34,500,-	IDR 6,573,000,-

(Data Processed, 2022)

From the table above, it can be seen that changes in the cost driver affect the total cost, and the cost per unit remains unchanged (constant). The graph (figure 1) shows, if the number of units processed is 0, the total variable is also 0. However, when the number of units processed increases, the total variable costs increase. This means that the total cost increases in direct proportion to the increase in the number of outputs processed; the magnitude of the increase is measured by looking at the slope of the line [31]. However, if the variable costs are higher, it can cause the outsourcing company a loss in price competition with competing companies [25].

Will the value per unit be constant at variable costs? The answer is yes, according to research results [9] states that the cost per unit for variable costs will always behave constant due to considering the cost action evaluation procedure in relation to the level of activity or volume of the product.

At variable costs, an increase in activity growth of 1% and a reduction in equivalent activity decreases by 1% [6]. Examples of variable costs include direct materials costs, some elements of factory overhead costs, direct labor costs, and selling costs [1]. Variable costing provides relevant management data on the effects of changes in production or sales mix [19]. So, the more production activities carried out, the more the total variable costs.



Picture 1. Variable Cost Graph

4. 3 Semi-Variable Costs

Semi-variable costs (semi-variable costs) are costs whose components include variable costs and some fixed costs [31]. Semi-variable costs are changes in cost per unit where the change in the output of the activity factor is inversely proportional, but the total cost changes but is not proportional to the transformation of the activity driver output [15]. Some semi-variable costs will not fit into a straight-line pattern. The cost may start at a certain point and rise at an increasing or decreasing rate (figure 2) [19].

Semi-variable costs must be divided into fixed costs and variable costs, where this fixed portion is the minimum cost that the company must spend for the services the company uses, this separation is carried out for planning and cost control purposes [1]. To perform an accurate break-even analysis and contribution margin, it is also necessary to separate costs between costs as variable or fixed [21]. These costs are more difficult to evaluate, as they change in response to volume fluctuations [8].

In short-run decisions, semi-variable costs experience an increase in fixed costs when production levels are different. However, in the long run, fixed costs must be borne and any additional analysis must be assessed taking into account the long-term effects on the company [19].

What happens if there is no separation between the elements of fixed and variable costs? If the separation is not done as a result, failure to enforce the decision tends to reduce the accuracy of the resulting alternative, especially if the sum of the semi-variable costs is relatively substantial compared to the total cost as a whole [17]. Alternatives on how costs will be allocated, and accurate cost estimates must be prepared for each alternative in determining the best decision [19]. This rule is applied to forecast financial performance at various levels of activity.

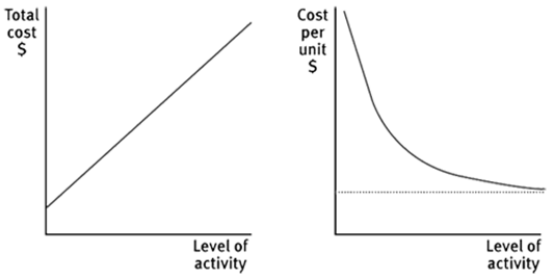


Figure 2. Semi-Variable Cost Graph

To separate costs between fixed costs and variable costs, it can be done by three methods. This method is used not only to estimate the fixed and variable components of semi-variable costs but also to determine whether a cost is fully fixed or fully variable within the relevant range of activities [4].

a. *High-Low Methods*

It is the simplest technique for separating mixed costs into fixed and variable parts [8]. In this procedure, fixed cost and variable cost are calculated using two points (highest and lowest) selected from historical data [16]. The magnitude of the unit variable cost and the change in capacity are the causes of the difference between the two points [16].

This method can be quite accurate if the maximum and minimum activity doses reflect the company's overall cost behavior. However, it has the disadvantage of using two extreme points, which may not represent normal conditions and will produce inaccurate results [21]. On research [8] also said that the high-low method can be very misleading because cost data are rarely linear and conclusions are based on only two observations.

b. *Scattergraph Methods*

How to plot data points on a graph to determine cost relationships. The purpose of this method is to determine whether a straight line can or cannot properly explain the cost relationship [31]. On research [15] shows different results between the separation of fixed costs and variable costs using the scattergraph method and the high-low method. This indicates that the required method is an objective method and produces the most suitable regression line (fitting line).

The reason for using this method is to ensure that there is a linear relationship between costs and output [21]. With this method, the actual costs incurred at different levels of activity are plotted on a graph [19]. Allowing cost analysis to visually examine data is a significant advantage of this method [31].

c. *Least Square Methods*

A technique that is applied to ensure linear ties between data so that their value can be estimated when the data does not lie in the data already owned [23]. In contrast to the high-low method, to estimate the volatility and percentage of fixed costs, this method takes all the observed data and tries to find the best fit line [21].

The least square method uses statistical analysis and requires the solution of two simultaneous equations [19]. This method is widely used in regression analysis to estimate parameter values in the regression equation [21].This technique is suitable for cost behavior analysis, the method seems very complex but not as complicated as it seems [8].

The purpose of this method is to determine the line so that it fits through a set of points on the graph, where the cumulative sum of the squared distances between the points and the line is minimized [8]. On research [28] said many researchers recommend using this method because this method is more accurate than the high-low method.

5. Conclusion

The importance of understanding cost behavior will assist management in preparing its budget, deciding whether to manufacture or purchase a component in anticipation of whether costs will increase or decrease. With this understanding can take a rational decision. Therefore, managers must be very careful in applying cost behavior assumptions to decision making whenever output levels fall outside the relevant operating range of the firm. That way, in running a business, both a company and a medium-sized business can separate costs based on their behavior, so they can determine production costs correctly.

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