



INTEGRATION OF COST VOLUME PROFIT AND ACTIVITY BASED COSTING IN OBTAINING COST ACCURACY FOR DECISION MAKING

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ABSTRACT

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This study aims to provide an explanation of how the integration of CVP and ABC can provide results of analysis and information that is more accurate than the traditional CVP on Elegant Photography to be used as a basis for decision making. The method used in this research is descriptive quantitative method by collecting data and information from the research location directly through interviews, observation and documentation. Furthermore, data and information analysis is obtained using cost volume profit analysis tools including break-even analysis, profit planning, margin of safety, shut down point, degree of operating leverage, and contribution margin and Activity based costing. The results obtained from this study provide the availability of more accurate and varied information. The CVP analysis results show the number of break-even points, earnings plans and contribution margins. As well as showing excellent performance in terms of the percentage of MOS and DOL while ABC analysis provides information about better cost accuracy so that the data and information from these two Terk can be the basis for strategic decision making for management.

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INTRODUCTION

At first glance, profit volume cost analysis is an excellent analytical model to support the availability of information that can be used as a basis for decision making. Lulaj and Iseni (2018) ; Abdullahi et al. (2017) stated that along with competition in the business world to meet increasingly complex customer satisfaction, managerial accountants must calculate costs, revenues, profit plans and others to assist operational monitoring planning that can be done using CVP analysis tools.

However, if examined more deeply, the cost-profit-volume analysis only focuses on the number of units sold as the only cost driver or driver. In other words, variable costs will increase only if the units sold have increased as well. In fact, in addition to production volume, increased costs can also be caused by a variety of triggers which may vary for each type of cost.

This is answered by the activity-based cost analysis model. Where the driver or driver of costs is not only caused by production volume. For example, batch-level activities such as regulatory activities, material handling, inspection, and quality assurance that occur in each line or batch of products and other examples such as building depreciation costs which can be allocated based on land area or electricity

costs based on the usage of each department, Dalci and Veyis (2005).

Therefore the aim of this paper is to show that information will be more adequate if the two methods are used together to support decision making.

LITERATURE REVIEW

Profit Volume Cost Analysis

Profit volume cost analysis is a management tool that is useful for testing, investigating, and evaluating changes and the relationship between total revenue, total costs, and production volume in order to maximize profit. Dalci and Veyis (2005); Lulaj and Iseni (2018); Armean and Maria-Larisa Ardeleanu (2017). The profit volume cost analysis model includes problem-solving techniques and procedures by understanding the characteristics of costs within the company, Budugan and Georgescu (2008). CVP or break-even-point analysis is a planning and decision-making tool as well as a tool for identifying important economic and business conditions because it emphasizes the interdependence between costs, units sold, and prices which is important information from a company, Hansen and Mowen in Utari, Purwanti, and Prawironegoro (2016).

We recommend that all products break even, especially divisions which are profit centers. The break-even point is useful for knowing the ability of a product or division to reach a profitable market.

Besides that, the break-even point is also very important to measure management in terms of cost efficiency and effectiveness in gaining a profitable market share. Dewi Utari, Purwanti, and Prawironegoro (2016).

There are several fundamental assumptions in deep CVP analysis Armean and Maria-Larisa Ardeleanu (2017) : Cost and income are linear, selling price is constant, total costs can be classified into fixed and variable costs, total fixed costs are constant, total variable costs are proportional to production costs, production volume is the only cost driver, the purchase price of production factors is constant .

To find the break-even point costs must be classified into fixed costs and variable costs. Hongren et., Al 2002 in Dalci and Veyis (2005), Dewi Utari, Purwanti, and Prawironegoro (2016) states that variable costs are costs that are directly related to the volume of production and vary proportionally to the volume of production, while costs that do not change even though the volume of production changes are known as fixed costs, Armean and Maria-Larisa Ardeleanu (2017).

Besides the BEP, or break-even point, management also needs to know analytical tools that are also useful for making decisions, namely security points, business closing points, operating leverage levels and contribution margins.

COSTS BY ACTIVITY

Activity-Based Costing (ABC) is a method for determining accurate costs and presenting factory overhead costs to cost objects accurately based on the activities of an accounting information system that identifies various activities carried out in an organization and collects costs on the basis and nature of existing and expansion of their activities, Blocher et al. (2013) ; Dewi Utari, Purwanti, and Prawironegoro (2016).

According to Garrison and Noreen (1997) in Dewi Utari, Purwanti, and Prawironegoro (2016) There are four steps of assigning overhead costs to cost objects, namely: Value process analysis, identifying activity centers, tracking costs to activity centers and selecting cost drivers.

RESEARCH METHODS

Types of research

This research uses a descriptive quantitative approach. By analyzing the data obtained from the research location, managing the data, making comparisons and drawing conclusions.

Time and Place of Research

The research was conducted for 2 months of the research period, namely March 11, 2019 to May 11, 2019 at Elegant Photography, which is located at Jl. Cockatoo II No. 3 Makassar South Sulawesi.

Procedure

The research procedure was carried out by collecting data and information directly at the research location by conducting interviews, observation and documentation. The data and information obtained are then processed using cost volume profit and cost analysis tools based on activities.

Data, Instruments, and Data Collection Techniques

The data used are the income statement and some balance sheet elements Elegant Photography and information about business processes. This data and information was obtained directly through interviews with various divisions in the research location.

Data analysis technique

The data analysis method used is activity-based cost analysis. The first stage is grouping overhead costs into homogeneous cost groups. The homogeneous cost group is a collection of overheads whose variations can be explained by a single causal factor (cost driver). To determine which cost groups are homogeneous, one can look at costs that have the same consumption ratio for all products. Second stage of plant overhead cost allocation:

Allocation of overhead costs = Group rate x Consumed loading basis

Profit Volume Cost Analysis

Determine the Breakeven Point (BEP) with the formula

Break-even point based on sales in rupiah

$$BEP = \frac{\text{Fixed Cost}}{1 - \frac{\text{Variabel Cost}}{\text{Sales}}}$$

Calculation of planned profit

$$\text{Sales} = \frac{\text{Fixed Cost} + \text{Laba}}{1 - \frac{\text{Variabel Cost}}{\text{Sales}}}$$

Determine the Margin of Safety (safety level)

$$\text{Margin of Safety} = \frac{\text{Aktual Sale} - \text{BEP Sales}}{\text{Aktual sales}}$$

Determine the Point of Business Closing

Shut-down point

$$= \frac{\text{Fixed cost by cash}}{\text{Margin contribution ratio}}$$

Determining the Degree of Operating Leverage

Degree of Operating Leverage =

$$\frac{\text{Contribution margin}}{\text{Operating profit}}$$

Determining Contribution Margins

Contribution Margin per unit = Price

Per Unit - Variable Cost per unit.

RESEARCH RESULTS AND DISCUSSION

Elegant Photography is a company engaged in photo and videography services. The products offered are indoor and outdoor photo and video services. This company already has one branch and is located in the city of Makassar. This company was

founded on August 17, 1993 in a shop on Jalan H. Bau. After several years of operation on Jl. H. The smell of the company moved to Jl. Cendrawasih Makassar and rent a bigger building. And finally able to buy their own building which is currently located on Jl. Cockatoo 2 No. 3 Makassar in 1997. Previously, this company did not use the method of cost-volume analysis of profit or cost based on activities in its profit planning.

Estimates of profit are only prepared in a traditional manner without any special method used as a reference. So that data collection is carried out by researchers independently identifying the elements needed to complete the research. The following shows the results and discussion of the research carried out for approximately two months of the research period

Table. 1 Summary of the Calculation Results of Profit Volume Cost Analysis

No.	Method of Analysis	Indoor Services		Outdoor Services	
		Score	Unit	Score	Unit
	Break Event Point Analysis				
1	In rupiah	17,749,182.70	Rp	14,500,355.91	Rp
	Within the Unit	355	Client	2	Client
2	Analysis of the January 2019 Profit Plan	18,272,637.31	Rp	30,087,719.47	Rp
3	Margin Of Safety Analysis	60	%	77	%
	Shut Down Point Analysis				
4	In rupiah	17,749,182.70	Rp	14,500,355.91	Rp
	Within the Unit	355	Client	2	Client
5	Analysis of Degree Of Operating Leverage	172	%	271	%
6	Contribution Margin Analysis	34,431.76	Rp	4,766,868.72	Rp

Source: Data processed by the author 2019

Elegant photography which previously had not implemented profit planning properly and correctly, but based on interviews with managers, Elegant Photography has formulated steps and

formed a team to formulate profit planning and other strategic planning. Wawo 2019 stated that Elegant Photography wants to plan future profits by paying attention to the number of customers, especially with the

number of new photo studios in Makassar so that competition becomes increasingly fierce and it is imperative to make strategic efforts to remain competitive with newcomers.

Another thing that is a strategic effort in increasing the number of customers, Elegant Photography opened a new branch to serve more customers. In the application of the cost volume profit analysis carried out by researchers, it is hoped that it can help Elegant Photography in advancing its business so that it can carry out cost efficiency that has an impact on increasing profits.

From the results of the analysis conducted by researchers on Elegant Photography in order to achieve maximum cost effectiveness and profit. The estimation factors are as follows:

The first thing that needs to be done in analyzing the cost of profit volume or cost volume profit is to determine the sales projection and price projection for January 2019 for each service. This determination is based on historical data from one year prior to that obtained from Elegant Photography using the Time series least square mathematical model. After obtaining the correct number, this figure becomes the reference for conducting the Cost Volume Profit Analysis process.

With this projection, it can be said that this projection is the amount that should have occurred in January 2019 so that the

projection of profit and loss can be estimated from the start.

The projected total costs for indoor services and outdoor services can be classified into variable costs and fixed costs as a requirement for calculating profit volume cost analysis. The result of the calculation shows the number of sales that must be achieved in order to break even that has been obtained for each type of service.

The reality that occurs in the field is that Elegant Photography managed to sell far above the break-even point in rupiah and in terms of quantity. So that the possibility of suffering losses will not occur as long as Elegant Photography is able to maintain or even improve its performance.

With this data analysis, it is hoped that it can become the basis for decision making so that businesses can be more advanced and can make supportive decisions to obtain maximum profits by increasing sales and making the benefits that can be obtained from each cost effective. In addition to calculating the break-even point analysis, in the profit volume cost analysis, there is also a way to determine the Margin Of Safety.

In this calculation, the greater the percentage obtained, the better the company's profitability. And based on this MOS calculation, Elegant Photography also shows good results, even more than 50%. This number shows a decrease in the number

of sales allowed so that the company does not suffer losses. If the decrease in the number of sales exceeds the MOS percentage, the company will suffer a loss.

The third analysis is the Shut Down Point analysis. If the actual sales amount reaches the shut down point, then the company is declared unfit to operate or in other words it must be closed because the contribution margin is only able to cover the fixed costs of cash and cannot cover the depreciation expense. Conditions that occur in the field, Elegant Photography has a number of sales that are far above the number of Shut down points, so it can be stated that elegant photography is at a very safe point.

The fourth analysis in the Cost Volume Product Analysis is the Degree of operating leverage analysis.

The calculation result of this analysis shows the change in operating profit that will occur if the sales increase by 100%. For an increase in sales of 100%, it is possible that even better promotional activities are carried out so that it will affect the number of customers. It should also be accompanied by the addition of studios and investment in supporting fixed assets for outdoor services.

The fifth analysis in the Cost Volume Product Analysis is the contribution margin analysis per unit. This contribution margin value shows the amount of profit available to cover fixed costs and for the profit from each unit of sale. Based on the calculation of the contribution margin per unit in Elegant Photography, it shows the availability of the amount of profit for each sales unit.

Table 2. Summary of Activity Based Cost Calculation Results

No.	Activity	Activity / Client Consumption Rates	
		Indoor Services	Outdoor Services
1	Photo	4,698.22	770,178.08
2	Editing	4,698.22	770,178.08
3	Printing	9,396.44	1,540,356.16
4	Packing	2,349.11	385,089.04
5	Delivering	2,349.11	385,089.04

Source: Data processed by the author 2019

Activity-based costing requires information about the level of activity that occurs in the business process and what

triggers the costs. In practice, the types of activities that exist include: Taking photos, Editing, Printing, Packing and Delivering.

The information about the total cost for each activity is also an element that must be present in the calculation of activity-based cost analysis. The calculation results show the amount of costs budgeted for shooting activities or special shooting for indoor services and for outdoor services. The second activity is editing, in this section the shooting results are edited in such a way as to produce quality images or videos. In this activity the budgeted costs are the same as for the photo shoot. The third activity is printing, in this activity photo printing and burning videos that have been edited are carried out in the editing activity. The costs budgeted for this activity are quite large. After finishing the printing activity, the fourth activity is carried out, namely packing. Each output is packed neatly and attractively so that the results will be safe until it reaches the client. The last activity is delivering, this is the activity of sending photos and videos to the client's address based on the provisions that have been arranged by Elegant.

From this information, the cost analysis is calculated based on the activity so that the analysis results are found, namely the cost consumption rate for each client for each activity. The results can be seen in table 2.

As for the two methods, both can be traced the costs incurred for each service unit. In CVP analysis, costs are classified

into two types, namely fixed costs and variable costs, while in the ABC analysis, costs are classified based on the level and type of activity that occurs in the production process.

From the two approaches, there are also differences in the acquisition of profits. Higher profits are obtained using Activity Based Costing analysis. This is because the costing of the Cost Volume Profit Method is relatively higher than the Activity Based Costing Analysis.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the results of research and data analysis on Elegant Photography by using two analysis tools, namely Activity Based Costing and Cost Volume Profit, the following conclusions can be drawn:

1. After obtaining the results of the break-even point calculation in rupiah and in units, it can be concluded that Elegant Photography needs to pay attention to the actions that must be taken so that the realization can exceed the break-even point amount and is in accordance with projections of both sales projections and cost projections.
2. *Margin Of Safety* shows a pretty good percentage so that the risk of possible loss is very small. However, to increase profits, this percentage can continue to be increased by increasing the number of

sales, some of the efforts that might be applied are increasing promotion and repair of equipment and maximizing the benefits of each sacrifice of assets.

3. With the determination of the shut down point, this value can be used as a basis for decision making to close the company or minimize the risk if it is forced to decrease the number of sales until it reaches the shut down point. In addition, this calculation can be used to anticipate the decline in sales that will occur and take preventive steps quickly.
4. Percentage of Degree of Operating leverage which shows the amount of increase in profit if sales increase 100%. This number indicates a large amount, but to achieve it, of course, it must be accompanied by an increase in existing capacity which requires a large investment in fixed assets. This calculation can be the basis for opening new branches.
5. The contribution margin per unit represents the amount available to cover costs and for profit. The higher the contribution margin, the greater the profit increase that will occur.
6. Activity-based cost analysis helps in tracking costs for each activity that occurs in the production process. This analysis should really help prevent

excessive or ineffective costs because the budgeted cost calculation is very clear on every detail of the work. So that any deviation that may occur can be resolved quickly.

7. After comparing the two methods, the method that produces more profit calculation is the Activity Based Costing method. In terms of cost tracking accuracy, ABC also shows better cost accuracy, however, categorizing costs into each activity requires a very detailed search so that the process becomes more complicated.

Suggestion

Based on research and data analysis, several suggestions can be made related to the results of this study including:

1. Cost Volume Profit analysis shows very good results regarding the productivity of Elegant Photography so it is suggested that it can be maintained or shared for the future.
2. In preparing the Activity Based Costing Analysis, an accurate analysis is needed regarding the determination of the cost budget and the classification of activities that occur and re-analyzing the cost drivers so that the cost drivers are not only fixed on the number of customers, especially in outdoor services.

3. The application of these two approaches is very necessary to apply considering that there is no approach used to prepare a budget on Elegant Photography.
4. As a suggestion for the next researchers, it would be possible to assist in the classification of costs and activities so that the calculation results can be more precise and can be used properly.

Implications and Limitations

The limitation of this study is mainly in the availability of information from the operational department which is unable to explain in detail about the business processes and cost absorption that actually occurs in detail so that the ability to manage information is needed to obtain relevant cost allocations, especially for completing activity-based cost analysis calculations.

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