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UTILIZATION OF THE ACTIVITY -BASED COSTING (ABC) SYSTEM IN DETERMINING OVER-COSTING OR UNDER-COSTING TUITION FEES

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ABSTRACT

This study aims to identify the application of the Activity Based Costing (ABC) system in Private Universities in determining the cost of goods for the study program. The main objective of this study is to determine the cost drivers by identifying and analyzing the activities of primary and secondary study programs. The research method through case studies by conducting quantitative descriptive analysis is collecting data, compiling data, classifying data, and deciphering data. The source of the data came from interviews and observation of financial statement documents with samples at XYZ University. The calculation results obtained the conclusion that several social and economic study programs at XYZ University were over costing and some exact study programs were under costing conditions. The implications of the results of this study provide input for XYZ University in developing an Activity Based Management (ABM) system as a process of continuous improvement in improving the quality of education.

Keywords: *Activity Based Costing, Activity Based Management, Private University, Tuition Fee*

ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi penerapan sistem Activity Based Costing (ABC) pada Perguruan Tinggi Swasta dalam penentuan harga pokok program studi. Fokus utama penelitian ini adalah mengidentifikasi kegiatan program studi primer dan sekunder untuk menentukan cost driver dan menentukan tarif dari masing-masing kegiatan tersebut. Metode penelitian melalui studi kasus dengan melakukan analisis deskriptif kuantitatif yaitu pengumpulan data, penyusunan data, pengklasifikasian data dan penguraian data. Sumber data berasal dari wawancara dan observasi dokumen laporan keuangan dengan sampel pada Universitas XYZ. Hasil perhitungan diperoleh kesimpulan bahwa beberapa program studi sosial dan ekonomi di Universitas XYZ berada dalam kondisi over costing dan beberapa program studi eksak berada dalam kondisi costing. Implikasi dari hasil penelitian ini memberikan masukan bagi Universitas XYZ dalam mengembangkan sistem Activity Based Management (ABM) sebagai proses continuous improvement dalam peningkatan kualitas pendidikan.

Kata Kunci: Biaya Berdasarkan Aktivitas, Manajemen Berdasarkan Aktivitas, Perguruan Tinggi Swasta, Biaya Kuliah

Introduction

Tuition fees at Private universities are often incorrectly calculated, resulting in either undercharging or overcharging students. A Private University can set tuition fees appropriately if the private university can calculate costs with operations appropriately as well. Traditional cost calculation systems are unable to accurately identify the costs of products and services, causing cost distortions (Kitsantas et al., 2020). Indirect costs are costs that vary in type and are difficult to trace directly to the product, therefore every organization must use a calculation method that can accurately allocate indirect costs so that the price charged can compete with competitors.

The Activity Based Costing (ABC) is a system that focuses on activities carried out to produce products or services. The advantages of the ABC system will trace what activities are cost-driven and an object of cost in a manufacturing company. The use of the ABC system in non-profit service organizations has been widely practiced by researchers. Research by Effendi et al. (2020) who examined the charging of tuition fees at state universities stated that ABC fees were able to provide a more accurate calculation of tuition fees. In addition, research conducted by Hidayat (2020) which examines the application of ABC system-based fees in reducing cost distortions in private universities said that the use of the ABC method can provide an overview of tuition fees that experience under-costing and over-costing in the implementation of higher education.

Research on the application of system ABC in allocating overhead costs has been widely carried out. Research by Marlina et al. (2020) revealed cost strategies in private universities so that they can compete by at least applying the concepts of ABC Costing, quality costing, life cycle costing, value chain costing, and target costing. Tari & Rahadian's research (2019) revealed that the results of the analysis of student unit cost calculations at private University X were more accurate than traditional methods. Previous research discussed the calculation of ABC on one study program as an object of cost and has not been able to describe the stages for the entire calculation of study programs in one private university. This study aims to determine the stages in making calculations using the Activity Based Costing (ABC) method for all study programs at private universities.

Activity Based Costing (ABC) is a useful method for accurately allocating overhead costs when charging fees. The calculation of ABC emphasizes the activity as the main object of basic costs. The philosophy behind ABC is that costs can only be significantly reduced by addressing the cause of cost arising, which is activity (Asni et al. 2019). The ABC System can improve user decision-making by emphasizing more customizable costing and the ABC System supports the new business environment and global business competition (Altawati et al. 2020).

Therefore, calculating the accuracy of the calculation of these costs requires understanding the relationship between resources, activities, and products or services. A resource is an economic element that is needed or consumed in carrying out activities.

When applying ABC, there are several stages involved. These stages include:

1. Identify resource and activity costs; The first step in designing the ABC system is to analyze activities to identify the cost of resources and activities of the enterprise. Most companies record the cost of resources in a particular account in the accounting system.
2. Assign resource costs to activities; Event-based costing uses the cost driver to assign the resources used in the activity. Resource-to-activity searches can use both live search and estimates. Live searches require actual data on resource usage in the activity.
3. Assigning the cost of the activity to the cost object; The final step is to assign the cost of the activity or the set of activity costs to the cost object based on the use of the cost driver into the proper activity. The output (output) is the object of costs for an enterprise or organization to carry out an activity that can be a product or service, customer, project, or business unit.

In the education industry, education costs are all overall costs that must be incurred by individuals, families, community groups, or educational institutions in supporting student learning activities in formal and non-formal education environments (Amri and Yahya, 2021). In Private Universities, the element of tuition fees consists of several types according to the characteristics of the use of fees at the Private University. Universities charge fees to prospective new students in various forms, including one-time Development Fees, semester-based Educational Operational Costs, Semester Credit Unit Fees, practicum fees, registration fees, and other expenses such as thesis fees, student fees, and graduation fees. These fees may vary depending on the university and program of study.

The allocation of the use of these costs in Private Universities is generally used for investment costs, operational costs, and personnel costs. Investment costs refer to the expenses incurred in providing facilities, infrastructure, human resource development, and fixed working capital. On the other hand, operating costs include salaries of educators and education personnel, along with all the benefits attached to salaries, consumable materials or equipment, and indirect educational costs such as power, water, telecommunications services, maintenance of facilities and infrastructure, overtime pay, transportation, consumption, taxes, insurance, and others.

The Activity Based Costing (ABC) system is mostly implemented in the manufacturing sector. Some of the ABC system literature can be applied in the service sector including

higher education services. According to research conducted by Lantang and Raimanu (2020), the implementation of the ABC system at the Private University Central Sulawesi was successful in improving the accuracy of cost calculations for goods in all the study programs. The research concluded that the ABC system was more effective compared to traditional costing methods, which often resulted in cost distortions such as over or under-costing. According to a study conducted by Asni et al. (2019), the Activity Based Costing (ABC) method is more reliable in calculating the cost of Single Tuition Fees (UKT) for students at State University. The study suggests that the ABC system is more accurate in determining the cost of UKT students compared to other methods.

The ABC method in educational institutions involves the identification, definition, and grouping of activities. Second, drill down directly into cost activities and objects. Third, charge costs to the activity cost group. Fourth, calculate activity rates. Fifth, charging costs to cost objects using activity rates and activity sizes and the last stage is compiling management reports (Wiyani, 2020). According to research by Madwe (2020), in a university, the application of the ABC system is influenced by factors, namely behavioral and organizational factors consisting of top management support and institutional cost structures, as well as technical factors of charging costs. Furthermore, Madwe (2020), stated that to introduce ABC in universities, a new model is needed that does not involve top management, the existence of management support must be handled first, and then technical factors and organizational cost structures (overhead levels) are needed. Meanwhile, the results of Hoang et al (2020) research show that ABC adoption is significantly influenced by training, competition, support from top managers, and university size.

After the results of the calculation of unit costs in each study program from the ABC system are known, the next step is to connect the ABC results with the Activity Based Management (ABM) system. In simple terms, the ABM system will focus on the dimensions of a process in the company's activities. The information obtained from the ABM system provides information on what activities are carried out, why they should be carried out, and how well these activities are carried out. The ABM system is an approach to the whole system that is integrated and focuses on management's attention to various activities to increase the value for customers of the profit funds achieved by realizing these values (Hansen & Mowen, 2019).

Activity Based Management (ABM) is when management can find out all activities that are value-added and not value-added for the company and its customers through ABM. In addition, management can know all activities of value. Activity analysis (Value – Non-Value Added) can achieve process improvement through (1) Reduction; reducing the time or effort

required to carry out activities, (2) Elimination; eliminating activity as a whole, (3) Selection; choosing alternative activities that have low-cost, (4) Sharing; making changes that allow the division of labor (Fatimah and Santoso, 2020).

Method

This type of research is comparative descriptive research, namely, research by collecting data, compiling data, classifying data, and outlining data. The results of the collected data can provide an overview of the conditions that occur in the object of study and compare them with ideal conditions in a theory. Comparative descriptive research is also a type of research that describes or describes the symptoms of the variables used to determine differences. Data consists of primary data and secondary data. A sample of data was obtained from XYZ University. Primary data are obtained from interviews, observations, and direct consultation of relevant parties in the object of study. While secondary data is obtained from data documentation in research objects and literature studies.

Result and Discussion

XYZ University as a Private University carries out the process of determining student tuition as the main source of income. From the university's 2019 financial report, it was obtained that the average income from students has a percentage of almost 93% of total income. To determine student tuition fees, an evaluation is carried out by the leadership every year with various consideration factors.

Influencing factors are the prices of other college competitors, the rate of inflation, and the assumption of price increases from previous years. After these factors are included in the pricing considerations, the next step is to determine in a rector's decree. The implementation of the decree is that all study programs follow and implement student tuition prices to be used as the basis for determining new student tuition fees every year. Currently, there is no specific method for determining student tuition fees. Instead, the cost per unit of study program is considered appropriate and relevant.

Tuition fees are based on the previous years of experience, which falls under the intuitive category. According to Ozari and Zare (2022), service-oriented organizations use four methods to estimate costs: intuitive, analogical, parametric, and analytical. These organizations have diverse activities and require further analysis and systematic work to understand the relationship between cost and quality.

The costs incurred in the financial statements are grouped by function or department and all overhead costs are charged based on the cost driver, namely, the number of active students. Study programs with a large number of active students will bear the overhead costs of other study programs even though the activities of study programs whose active students are not too much compared to study programs with few active students. This

condition led to cross-subsidies and as a result of this, the management of XYZ University had difficulty assessing the performance of the study program from a financial perspective.

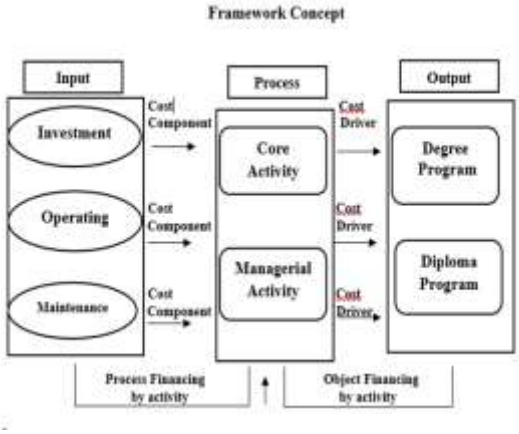
In implementing the ABC system, the stages carried out are:

University Business Process Identification.

Business processes at XYZ University consist of inputs, processes, and outputs. Input consists of students, teachers/educators who have their respective scientific competencies, wise and scholars, and various brilliant ideas that are creative and innovative.

Inputs are processed in Islamic values through an excellent educational process, equality in system values, and entrepreneurial values to produce quality graduates. In general, the ABC system process in identifying business activities in a cost report can be seen in Figure 1 below:

Figure 1: ABC concept framework in colleges

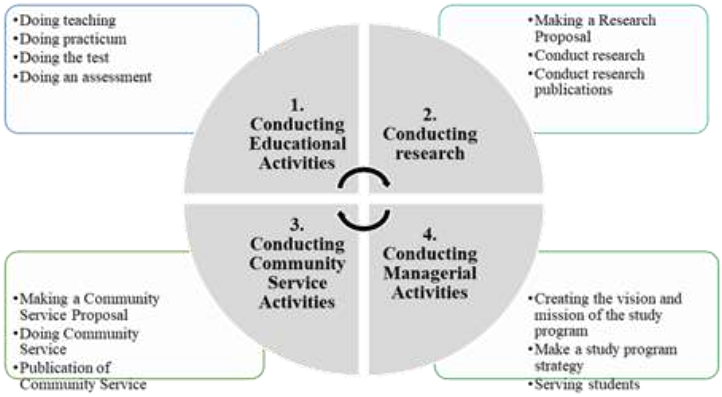


Source: Ministry of Research and Technology with data modification (2021)

Identification of activities in the study program at XYZ University

To identify internal activities at XYZ University can be distinguished into core activities and supporting activities. Primary activities are carried out by all study programs by carrying out educational, research and community service activities as well as carrying out managerial activities of the study program. Meanwhile, secondary activities are carried out by directorates and units that carry out service activities and managerial activities. In detail, the primary and secondary activities can be seen from figure 2:

Figure 3: Primary and Secondary Activities of Study Programs at XYZ University



Source: Processed data (2021)

Identification of Objects of Costs, Direct Costs and Indirect Costs

At XYZ University, the cost of each study program is divided into two categories: direct costs and indirect costs. There are six specific study programs and fourteen programs related to social sciences and humanities. Direct costs are easily traceable and include direct labor costs of individuals involved in educational activities, such as lecturers. On the other hand, indirect costs are made up of various expenses, such as labor costs, tuition fees, raw material costs, utility costs (electricity, internet, telephone, and water), maintenance costs, building rental costs, equipment depreciation costs, and other overhead costs that are incurred by study programs for academic activities, laboratories, and lectures.

Identify Costs Drivers

Direct tracing is the charging of direct costs to the activity by directly identifying the resource consumption by the activity. In the study program at XYZ University, is the direct cost of the main teaching activity, namely the use of labor resources, namely lecturers. Meanwhile, other resources are categorized as indirect costs, because all study programs are in the same building and the use of rooms is carried out by study programs both one faculty and between faculties. The activities of the study program obtained which are included in the category of direct costs and the resources used can be seen in Table 1 (attached). From the data from the financial statements of XYZ University in 2019, data for direct costs in the study program can be seen in Table 2 (attached).

Identification of Indirect Costs

Indirect costs that occur include the salary and benefits of the chairman and secretary of the study program, the cost of salary of fixed lecturers, the cost of consumables in the laboratory, utility costs, depreciation costs, maintenance costs, research, and community servant costs and other equipment costs used in the study program activities. For each

study program activity, the variable indirect costs (overhead) that arise and the resources used as well as cost drivers can be seen In Table 3 (attached)

Identify Category Expense and Cost Driver

To calculate indirect costs accurately, it is important to group activities into different cost categories and determine the cost drivers for each category. In order to calculate the unit cost of a study program, the activities can be classified into four general categories: unit level, batch level, product level, and facility level. This categorization helps to simplify the calculation of study program costs because activity costs related to different levels will respond to different types of drivers. Table 4 (attached) shows the amount of indirect costs obtained from the financial statement data for 2019.

In Table 4, groups of activities are categorized based on batches such as labor costs and internet costs. These costs are not affected by a single unit of activity but apply to all activities. On the other hand, groups of activities by unit are based on each activity that is carried out. Meanwhile, activity groups based on facilities are determined by the use of lecture-building facilities. The study program will be charged for each of these costs according to the cost driver, which is the main driver. In Table 4, groups of activities are categorized based on batches such as labor costs and internet costs. These costs are not affected by a single unit of activity but apply to all activities.

The cost of study programs is determined by different factors. Activities are grouped based on the unit and facility they belong to. The cost driver, which is the main driver, determines the cost of each activity group. The number of workers, class use, research, room use, equipment use, and research and community service are the cost drivers for each study program. Table 5 (attached) shows the number of cost drivers for each study program. Not all cost drivers have a positive correlation with the number of active students. Some study programs with a large number of active students have a small number of cost drivers, while others have more cost drivers.

Determining Indirect Rates and Cost Allocations

After the data on the realization of the cost driver from the activities of each study program is known, the next step is to determine the rates of each activity in the cost group based on the cost driver. The rates of each cost group are searched using the total cost formula divided by the amount of usage from the cost drivers of each study program. In detail, it can be seen in Table 6 (attached) which describes the rates of each driver's cost per year and the unit of the driver's cost.

For the determination of the depreciation fee rate of each study program, the charge is based on the depreciation of office equipment, computers, furniture, and laboratories located in each study program. Depreciation uses the straight-line method with an

economical lifespan of 4 years. From the data obtained, assets are spread across Universities, faculties and study programs, to allocate depreciation costs, then first depreciation costs will be identified for study programs and then the depreciation rate is sought and depreciation costs are allocated to each study program. In detail, it can be seen from Table 7 (attached) of determining the depreciation fee rate on assets contained in the study program.

After the tariff determination stage is completed, the next step is to determine the allocation of each indirect cost by multiplying the tariff and the number of activities that occur in each study program. In detail, each indirect cost allocation that occurs in the study program can be seen in Table 8 (attached).

Allocating Support Department Fees to the Study Program.

Service activities for students include student affairs, finance, academics, libraries, and information systems centers. Other activities such as activities to fulfill the tri dharma of higher education include research institutions, study centers, and overall managerial activities within the rectorate, quality assurance agencies, and other directorates. To facilitate the allocation of costs from the support department, the costs that occur in the directorate/unit institution at XYZ University are grouped into service activities, development activities for study program lecturers, and managerial activities for study program development. From the data obtained here is the amount of support department costs in 2019 can be seen in Table 1:

Table 9 Driver Costs for allocation of supporting instruments

Support Department	Service to Students	Study Program Development	University Development
Direct Costs	9.647.740.152	1.597.711.008	7.684.498.812
Overhead Costs	12.028.559.061	5.191.684.629	13.777.883.120
Total	**21.676.299.213**	**6.789.395.637**	**21.462.381.932**
Cost Driver:	The number of students in the study program	Number of Lecturers in study programs	The number of students in the study program

After the direct and indirect costs in the support department are allocated to each study program, the next stage is to add up the total direct costs, indirect costs, and departmental allocation costs in each study program. To see the cost per semester in the study program, the total cost in each study program will be divided per semester and then divided by the number of active students, so that the cost per unit of each study program will be known. In detail, the main cost of the study program can be seen in Table 10 (attached).

To calculate the distortion of the cost of the course of study with the applicable student tuition fees, the first step is to add the margin for the development reserve into the unit cost

of the study program. The annual development fund reserve at XYZ University is different every year, but on average based on the percentage of net asset difference (margin) for 4 years is 6-10% of the cost per unit of study program. This reserve will be used for the development of the university in terms of the development of study programs, and educational and research infrastructure. Distortion occurs by comparing the price of a student's tuition with the total cost per course of study plus the reserve of development funds. The results of the distortion of the study program can be seen in Table 11 (attached)

Connecting Activity Based Costing (ABC) Systems with Activity Based Management (ABM).

The results of the calculation of unit costs in each study program from the ABC system above, then the next step is to connect the ABC results with the Activity Based Management (ABM) system. The initial stage of the ABM system is to identify the activities of the study program both primary and secondary in detail and in detail into activities that are value-added and not value-added. From the activities of the study program below, activity analysis can be carried out in one way, namely Reduction (R), Elimination (E), Selection (S1) and Sharing (S2). From table 13 below, it can be explained that the total costs incurred in the study program can be reduced by reducing activities that are not value-added. For the main activities in the form of education, research and community service, these activities must still be carried out by the university. As for managerial activities such as serving students at the study program level and service centers, universities can carry out reduction and sharing strategies.

Reduction strategies can make managerial activities more effective in terms of activity effectiveness and time. An example of the efficiency of activities for the creation of a vision and mission and a study program strategy would be better to have a special division that handles the university's overall strategy. The sharing strategy, can create facilities by creating an integrated service center for academic, financial and information services in one room, because so far, each faculty has its own room and facilities.

In addition, for study program activities that can be carried out sharing is by using a shared laboratory room, such as an international conference laboratory, its use can be combined for laboratories in others such as public lectures. Selection can be made for lecturers whose academic rank and education level provide credit scores to study programs that continue to be encouraged to develop. In addition, most importantly, managerial functions in the support department can be selected what activities are really added value to the development of universities and study programs. The results of the recommendation activity can be seen in table 2 below:

Table 2. results of the recommendation activity study programs at XYZ university in 2019

Activity Name	Activity Description	Activity Level	Activity				
			Value Added	*Elimination*	*Non Value-Added Reduce*	*Non Value-Added Selection*	*Non Value-Added Sharing*
A. Activities in the Study Program							
Conducting Educational Activities	Conducting teaching	Unit	*Yes*				
	Practicum	Unit	*Yes*				
	Conducting the Exam	Unit	*Yes*				
	Conducting an assessment	Unit	*Yes*				
Conducting Research	Creating a Research Proposal	Unit	*Yes*				
	Conducting Research	Unit	*Yes*				
	Conducting research publications	Unit	*Yes*				
Doing Community Service	Making a Community service Proposal	Unit	*Yes*				
	Doing Community service	Unit	*Yes*				
	Conducting Community service publications	Unit	*Yes*				
Conducting Managerial Activities	Creating the Vision and Mission of the Study Program	Batch			*Yes*		
	Create a Study Program strategy	Batch			*Yes*		
	Serving students	Batch					*Yes*
B. Activities of the Support Department							
Doing Service to Students		Batch					*Yes*
Conducting Study Program Development		Batch				*Yes*	
Conducting University Development		Batch				*Yes*	

Conclusion

Determining the cost of goods for study programs is crucial for XYZ University. By employing the Activity Based Costing (ABC) system, the university can establish the tuition fees of study programs each year. It helps to identify under-costing or over-costing in various study programs. The ABC calculation at XYZ University also enables Activity Based Management (ABM) to analyze value-added and non-value-added activities. For study programs that face under costing, they can reduce non-value-added activities by sharing or reducing facilities. On the other hand, study programs that experience over costing can develop innovative strategies in learning activities to maintain their quality and further improve it.

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