

IMPLEMENTATION OF ACTIVITY-BASED COSTING FOR ACCURATE STUDY PROGRAMME COST CALCULATION AT X UNIVERSITY

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ABSTRACT

The importance of implementing Activity-Based Costing (ABC) in accurately calculating the cost of higher education study programmes was considered crucial in supporting managerial decision-making, particularly in determining the tuition fees (SPP) per semester for students while accommodating the development of hybrid learning systems. The implementation of Activity-Based Costing at University X aimed to transform a traditional cost allocation system into a more accurate costing system for educational services charged to students. The method was expected to alleviate the primary issue of cost distortion, as ABC allocates costs based on activities and the resources consumed that are directly related to educational, educational support, and non-educational activities. This study employed a qualitative approach in which the researcher acted as a participant observer. The researcher directly identified, analysed, and allocated the costs of supporting unit activities to the main academic units. The analysis also included the costs related to the implementation of the hybrid blended learning system at University X using the ABC approach. The accuracy of calculating the prime cost of each study programme depends on cost traceability, which was conducted through three tracing methods: direct tracing, driver tracing, and allocation. The results show that the implementation of ABC increases the accuracy of calculating the prime cost of each study programme at University X. The analysis identifies cost distortions in the form of overcosting and undercosting and indicates the presence of cross-subsidisation between study programmes. These findings provide more reliable cost information for university management in determining tuition-related policies.

Keywords: *Activity-Based Costing, cost driver, cost tracing, cost distortion, cross-subsidy.*

INTRODUCTION

The increasingly intense competition in the education sector has required higher education institutions in Indonesia, particularly private universities, to continuously improve their efficiency and effectiveness in order to achieve good governance and enhance institutional competitiveness in both quality and quantity.

For private universities, tuition fees represent the primary source of income used to finance operational activities and institutional development. Consequently, tuition fee management requires efficiency, accountability, and accurate cost calculation to ensure that educational services are delivered sustainably and fairness in fee allocation. However, many

universities still rely on traditional cost allocation systems that tend to oversimplify cost distribution and potentially generate cost distortion. This distortion may lead to overcosting or undercosting across study programmes, thereby affecting fairness in tuition fee determination and managerial decision-making. This issue becomes more critical with the implementation of the Hybrid Blended Learning system, which changes resource consumption patterns and increases the complexity of cost structures.

The implementation of Activity-Based Costing (ABC) offers a more accurate alternative by allocating costs based on activities and the resources consumed. The ABC approach recognises that educational costs arise not only from direct teaching activities but also from supporting academic and non-academic activities that contribute to the delivery of educational services. Therefore, ABC provides more transparent and reliable cost information compared to conventional allocation methods.

The novelty of this research lies in the application of ABC to analyse the cost structures by each study programme within University X, incorporating the impact of Hybrid Blended Learning on activity consumption, with particular emphasis on identifying activity-based cost drivers in both academic and supporting activities. This approach is expected to reduce cost distortion and improve the precision of cost information used in tuition fee determination.

Based on the description above, the researcher was interested in applying ABC to improve the accuracy of calculating the cost per study programme at University X in order to produce significant cost information that could serve as a basis for managerial decision-making, particularly in determining the tuition fees (SPP) charged to students each semester in every study programme. Accordingly, the researcher formulated the problem in the form of a main research question: Can the implementation of Activity-Based Costing (ABC) improve the accuracy of calculating the cost of each study programme at University X? Furthermore, several mini research questions were developed to explore the issue in greater depth, to answer the main research question, and to identify appropriate solutions that would generate practical recommendations for addressing the core problem.

LITERATURE REVIEW

Activity-Based Costing (ABC)

Activity-Based Costing (ABC) has been developed as a solution to limitations inherent in traditional costing systems, particularly the problem of cost distortion resulting from allocating fixed and variable costs solely based on output volume (Atkinson et al., 2018). ABC

is grounded in the premise that cost objects consume activities, while activities consume resources. Therefore, costs arise due to identifiable causes that can be measured and managed.

According to contemporary management accounting literature (e.g., Kaplan & Anderson, 2007; Horngren et al., 2022), ABC assumes that activities consume resources and cost objects consume activities. Therefore, costs are assigned based on cause-and-effect relationships rather than arbitrary allocation bases. This approach enhances cost accuracy and supports strategic decision-making.

Recent studies (e.g., Al-Halabi & Shaqqour, 2023; Nguyen et al., 2022) indicate that ABC remains highly relevant in service sectors, including higher education, where indirect costs dominate operational structures. ABC has evolved from a product-costing tool into a broader activity-based management (ABM) system that supports cost control, efficiency evaluation, and performance improvement.

According to Mulyadi (2015), ABC was initially designed to improve the accuracy of product costing, especially in allocating overhead costs. However, its development has extended beyond product costing into a comprehensive activity-based cost information system that supports activity management, cost efficiency, and accurate costing of both products and services. In service organisations such as higher education institutions, ABC enables more precise identification of resource consumption associated with educational and supporting activities.

Cost Tracing

A cost object refers to any activity, service, or organisational unit for which costs are accumulated and measured. Accurate cost assignment to cost objects is essential to ensure fairness and reliability in cost information. Costs may be directly or indirectly related to cost objects, and measurement depends on the degree of traceability based on cause-and-effect relationships.

Hansen and Mowen (2020) classify cost tracing into three approaches:

1. Direct Tracing, which identifies and assigns costs directly to cost objects based on observable physical relationships.
2. Driver Tracing, assigning costs using resource or activity drivers when direct tracing is not feasible.
3. Allocation, which distributes indirect costs using arbitrary or assumed bases when causal relationships cannot be clearly established / cannot be directly observed.

The greater the proportion of costs that can be traced using direct or driver tracing, the higher the accuracy of cost information produced. In this study, tracing accuracy is positioned as a key mechanism influencing the reduction of cost distortion.

Cost Driver Determination

Cost drivers indicate where and how costs should be assigned and represent the causal factors of resource consumption. The selection of appropriate cost drivers is crucial for improving cost accuracy within the ABC framework.

Kaplan and Cooper's framework remains relevant and is supported by recent literature (Drury, 2021; Atrill & McLaney, 2022), emphasising three important considerations in selecting cost drivers:

1. The cost of measurement refers to the ease and feasibility of obtaining cost driver data.
2. Degree of correlation, reflecting how closely the cost driver represents actual activity consumption. Higher correlation leads to more accurate cost allocation.
3. Behavioural effects, which consider how cost drivers influence managerial and organisational behaviour. Cost drivers that encourage efficient behaviour are preferable.

In higher education, cost drivers may include the number of students, credit hours, number of classes, number of lecturers, classroom usage hours, and digital learning infrastructure usage. Improper selection of cost drivers may result in cross-subsidisation among study programmes, where one programme unintentionally subsidises another.

Support Department Cost Allocation Methods

Support department costs must be allocated accurately to operational units to avoid cost distortion. In practice, organisations often have multiple support departments that interact with each other, making allocation more complex.

According to Horngren et al. (2022) and Hansen and Mowen (2020), three primary allocation methods are commonly used:

1. Direct Method, the simplest approach, allocates support department costs only to production or main departments without recognising interactions among support departments.
2. The Sequential (Step-Down) Method partially recognises interactions among support departments by allocating costs sequentially based on predetermined ranking. Costs are not allocated back to previously allocated departments.

3. The Reciprocal Method fully recognises mutual services among support departments. Total support department costs consist of direct costs plus allocated costs received from other support departments before being assigned to the main departments.

The reciprocal method provides the highest accuracy but requires more complex calculations.

Activity-Based Costing in Higher Education

The application of ABC in higher education institutions enables more accurate measurement of educational service costs, particularly at the study programme level, as an activity centre. Higher education institutions exhibit characteristics that make ABC particularly suitable:

- High proportion of indirect costs
- Multiple service outputs (study programmes)
- Shared facilities and support services
- Increasing demand for cost transparency

Recent empirical studies (e.g., Cagwin & Bouwman, 2021; Al-Halabi & Shaqqour, 2023) confirm that ABC improves cost transparency, pricing decisions, and budget allocation in universities. The implementation of ABC in higher education generally involves two main stages:

Stage I: Assigning Resources to Activities (Activity-Based Process Costing)

1. Identifying all academic and support activities.
2. Identifying all resources consumed (e.g., salaries, depreciation, maintenance, IT infrastructure, human resource development, and operational expenses).
3. Determining resource drivers (e.g., number of staff, equipment usage, building area).
4. Assigning resource costs to activities using resource drivers.

Stage II: Assigning Activities to Cost Objects (Activity-Based Object Costing)

1. Identifying cost objects (e.g., study programmes or educational services).
2. Determining activity drivers.
3. Assigning activity costs to cost objects based on activity consumption.

Through these stages, ABC produces more accurate cost information that supports managerial decision-making, efficiency improvement, and fair determination of educational operational costs.

Evaluation of Cost Distortion and Efficiency

After the assignment of resources to activities and activities to cost objects, the final stage in Activity-Based Costing (ABC) implementation is the evaluation phase. This stage is critical because the primary objective of ABC is not merely cost calculation, but the improvement of cost accuracy, transparency, and managerial decision-making. In higher education institutions, this evaluation focuses on cost distortion analysis, cross-subsidisation identification, efficiency assessment under hybrid or blended learning systems, and cost optimisation opportunities.

1. Cost Distortion Analysis

Cost distortion occurs when costs are inaccurately assigned to cost objects, resulting in overcosting or undercosting of certain programmes or services. Traditional volume-based costing systems frequently distort costs by allocating overhead using a single base, such as student numbers or credit hours, ignoring variations in activity consumption.

According to contemporary management accounting literature (e.g., Drury, 2021; Horngren et al., 2022), cost distortion arises when:

- Allocation bases lack causal relationships with resource consumption.
- Indirect costs are disproportionately distributed.
- Complex activities are treated as homogeneous.

In the higher education context, programmes with laboratory-intensive activities, professional accreditation requirements, or smaller class sizes may consume more resources than theory-based programmes. If overhead is allocated uniformly, resource-intensive programmes may be undercosted, while others may be overcosted.

ABC reduces distortion by linking costs to actual activities and drivers. Therefore, Stage III evaluates the magnitude of cost differences between traditional costing and ABC results to identify distortion levels. A significant variance indicates the presence of cost misrepresentation under the previous system.

2. Identification of Cross-Subsidisation Among Programmes

Cross-subsidisation occurs when one study programme unintentionally subsidises another due to inaccurate cost allocation. This phenomenon is common in universities that apply average tuition structures without precise programme cost measurement.

Recent studies in higher education costing (e.g., Al-Halabi & Shaqqour, 2023; Atrill & McLaney, 2022) suggest that cross-subsidisation may lead to:

- Inequitable tuition pricing
- Misallocation of institutional budgets
- Strategic misjudgement regarding programme sustainability

Through ABC analysis, each programme's actual resource consumption can be compared to the tuition revenue it generates. If a programme's calculated cost exceeds its revenue, while another generates excess margins due to lower cost consumption, cross-subsidisation is identified.

In this stage, evaluation includes:

- Comparing the per-programme cost before and after ABC implementation
- Identifying programmes that are overfunded or underfunded
- Assessing financial sustainability and fairness

The identification of cross-subsidisation supports more rational policy decisions in determining educational operational costs and tuition structures.

3. Efficiency Analysis under Hybrid or Blended Learning Systems

The transformation of higher education through digitalisation and hybrid/blended learning models has significantly changed cost structures. Hybrid learning combines face-to-face instruction with online delivery, potentially affecting facility usage, teaching hours, administrative support, and IT infrastructure costs.

Recent higher education management research (e.g., Nguyen et al., 2022; OECD reports, 2023) indicates that hybrid learning may:

- Reduce classroom facility costs.
- Increase IT infrastructure and digital platform investment.
- Change activity cost drivers (e.g., system access hours instead of classroom hours)

In the ABC framework, efficiency is evaluated by comparing:

- Cost per student before and after hybrid implementation
- Activity consumption changes (e.g., reduction in physical maintenance, increase in digital services)
- Output indicators such as student performance and retention

Efficiency is achieved when equal or improved educational outcomes are delivered at lower or optimised cost levels. ABC facilitates this evaluation by isolating activity-level cost behaviour, enabling management to assess whether blended learning reduces total cost per programme or merely shifts cost categories.

Theoretical Framework and Research Model

This study is based on the proposition that the implementation of Activity-Based Costing improves the accuracy of cost calculation by enhancing cost tracing, selecting appropriate cost drivers, and allocating support department costs more precisely. The research model positions ABC implementation as the independent variable influencing the accuracy of study programme cost calculation as the dependent variable, particularly within the context of hybrid learning environments in higher education.

This study adopts Activity-Based Costing as the primary theoretical foundation to explain how activity identification, cost tracing, and cost driver determination influence the accuracy of the study programme cost calculation. The framework assumes that traditional costing systems contribute to cost distortion, while ABC improves accuracy through causal cost assignment. Cost tracing and cost driver selection act as supporting mechanisms that strengthen the precision of ABC implementation. Additionally, the appropriate allocation of support department costs enhances the completeness of cost measurement within educational institutions.

The research proposes that the implementation of ABC, supported by accurate cost tracing and appropriate cost driver selection, leads to improved accuracy in calculating the basic cost of study programmes. Consequently, more accurate cost information contributes to fair tuition fee determination and better managerial decision-making.

Research Proposition / Hypothesis:

The implementation of Activity-Based Costing, supported by proper cost tracing and cost driver selection, improves the accuracy of study programme cost calculation.

Research Model (conceptual):

ABC Implementation → Cost Tracing Accuracy → Appropriate Cost Driver Selection → Improved Study Programme Cost Accuracy → Fair Tuition Fee Determination

RESEARCH METHOD

This research was conducted using a qualitative approach, with a case study focused on University X, utilizing financial statement data and supporting documents for the period 2023–2024. Data collection techniques were carried out through the following methods:

1. Semi-structured interviews were conducted with several individuals who were directly involved in activities related to the implementation of Activity-Based Costing (ABC) and the process of preparing financial reports. The respondents included: the Head and

staff of the Finance and Accounting Department; the Head and staff of the Academic and Student Administration Department; the Head and staff of the General Administration Department; the Head of the Human Resources Department; the Head of the Laboratory Unit; the Head of the Library Unit; the Heads of Study Programmes; and the Head of the Student Affairs and Alumni Unit.

2. Observation, which involved the researcher directly as a participant observer. In this role, the researcher directly identified, analysed, and allocated the activity costs of supporting units to the main academic units, including the costs associated with the implementation of the hybrid blended learning system at University X.
3. Document analysis, which involved examining financial statements, written records, and other relevant supporting documents for the purposes of data verification and comparison.

This research design is directed to the main problems that have been formulated in the form of main research questions: Can the implementation of Activity Based Costing (ABC) improve the accuracy of cost calculation for each study programme at University X?

To answer the main research question mentioned above, several mini research questions were used as follows:

1. How is the calculation of the basic cost per semester that has been applied to all study programs at X University?
2. What problems will arise as a result of the policy for calculating the cost of goods?
3. What are the activities of the main academic units and academic support units related to the calculation of the main burden of each study program that can be identified at X University?
4. How are the activity costs of support units allocated to the main academic units, including the costs of implementing the hybrid blended learning system at Universitas X, using Activity-Based Costing (ABC)?
5. How is the cost of each study program at X University compared to the results of the ABC calculation before using ABC?
6. What are the implications for the management after getting information on the cost of each study program at X University from the results of ABC calculations compared to before using ABC?

University X has implemented a simplified approach to calculating the cost of study programmes based on a Functional-Based Product Costing system. In this approach, in addition

to charging the direct costs of each study programme, the university also allocates the costs of support departments to the main academic departments using the direct method of allocation. The allocation employs the same unit-level activity driver, namely the percentage of the number of active students in each study programme, without recognising the interaction among supporting units and without considering the specific activities performed by either the main units or the supporting units. As a result, the calculation of the cost per student per semester across study programmes tends to be relatively similar, lacks accuracy, and leads to cost distortion.

Based on data obtained from semi-structured interviews, the researcher's role as a participant observer, and the analysis of internal documents at University X, comprehensive information was obtained regarding the activities of both the main academic units and the academic support units related to the calculation of the cost of each study programme that can be identified within the university.

To simplify the calculation of the cost of each study programme, the activities of the supporting units can first be grouped into cost pools based on similarities in their **cost** drivers. A cost pool represents a grouping of specific activities within an organisation that share the same activity driver. Furthermore, the accuracy of calculating the cost of study programmes depends on the level of traceability, which can be achieved through three tracing approaches: direct tracing, driver tracing, and allocation.

The results of the study indicate that the implementation of Activity-Based Costing (ABC) at University X improves the accuracy of calculating the cost of each study programme, as evidenced by the identification of cost distortions (overcosting and undercosting). In addition, the findings also reveal the existence of cross-subsidisation among study programmes within the university.

RESULTS OF RESEARCH AND DISCUSSION

1. Calculation of the cost per semester which has been applied to all study programs at X University.

Based on semi-structured interview data sources, in which the researcher in this study acts as both participant and participant observation, and analysis of University X's internal documents, data on the calculation of the cost of goods per semester is obtained which is applied to all study programs at X University with the data year being used are financial

statements for the period January – December 2023 which are assumed to represent the cost of 2 (two) semesters per year. Here, the costs incurred to carry out the operational activities of X University can be divided into costs incurred by the main unit (main department), namely 8 (eight) Study Programs (Prodi), and costs incurred by support units (support departments). i.e. the costs of all departments and institutions of X University.

X University has implemented a simple calculation of the cost of study programs based on function (Functional-Based Product Costing), namely in addition to charging the direct costs of each study program (Regular, Work and Investment costs), it also charges the costs of support departments to the main department using the direct method of allocation with the same unit-level activity driver, namely the percentage of the number of active students in each study program, without acknowledging any interaction between supporting units, and not paying attention to the activities of the main and supporting units. (*Atkinson dkk, 2018; Mulyadi, 2015*)

$$\text{support unit allocation} = \frac{\text{the number active students}}{\text{total active student X university}} \times \text{support unit cost}$$

While the cost per student / year is calculated by the formula:

$$= \frac{\text{Total Direct Cost of Main Unit (Prodi) + Allocation of Supporting Unit Cost) 1 Year}}{\text{Average number of active students per Study Program}}$$

Because the annual financial report data is assumed to represent 2 (two) semesters, the calculation of the Cost per student/semester of each Study Program is calculated by the formula:

Basic Expenses per student / Year : 2

The calculation of the principal/student/semester load that has been applied to all study programs at X University “regular without using the ABC method” during the January–December 2023 period is presented in Table 1:

Table 1. Calculation of Tuition Fee / Semester using the Regular Method

NO	STUDY PROGRAM	January – December 2023				
		Direct Operational Cost	Supporting Cost (Allocation Proportional Number of Students in the Study Program)	TOTAL COST (Direct + Indirect Supporting)	Tuition Fee /Student /Year	Tuition Fee /Student /Semester
1	S1/DIV - 01	200.064.658	11.640.521.567	11.840.586.225	30.282.829	15.141.415
2	S1/DIV - 02	98.202.748	2.590.090.477	2.688.293.225	30.899.922	15.449.961
3	DIII - 01	59.288.162	952.676.957	1.011.965.119	31.623.910	15.811.955
4	S1/DIV - 03	191.246.272	6.624.081.966	6.815.328.238	30.630.689	15.315.344
5	S1/DIV - 04	110.011.767	1.071.761.577	1.181.773.344	32.827.037	16.413.519
6	S1/DIV - 05	120.020.136	1.458.786.590	1.578.806.726	32.220.545	16.110.273
7	S1/DIV - 06	68.349.560	3.036.657.800	3.105.007.360	30.441.249	15.220.624
8	S1/DIV - 07	50.671.470	803.821.182	854.492.652	31.647.876	15.823.938
TOTAL		897.854.773	28.178.398.117	29.076.252.890	30.719.760	15.359.880

2. Problems that will arise as a result of the policy of calculating the cost of goods that has been applied to all study programs at X University.

Universities, as a form of non-profit organization are generally divided into (a) the main academic units that are directly related to education, namely the Study Program (Prodi), and (b) supporting units or supporting educational activities such as new student admissions, student academic administration, finance, libraries, and other service units. Each supporting unit incurs costs that will be charged to the main unit in calculating the cost of each study program. (Fattah dkk, 2017; Nguyen dkk, 2022).

The allocation of the costs of the supporting units to the main unit is a direct method of allocation based solely on the unit-level cost driver, the number of active students in each study program, resulting in a cost of 1 semester per student for each study program, which is

relatively the same. In this case, using only unit-level cost drivers to charge the cost of supporting units to the main unit will result in cost distortion (*Atkinson dkk, 2018; Carter, W.K. & Usry, M.F., 2013*), namely, certain study program students with a higher number of active students must share the costs that should be borne by other study program students with a higher number of students. fewer active students, because in the end, the calculation of the cost of goods will lead to the determination of the SPP per semester for each student of each study program. In addition, the calculation of the amount of student SPP including the increase compared to the previous period has so far been determined by the foundation's policy together with the management leadership of X University on the basis of considerations, including inflation factor, the average SPP of other private universities as a comparison, the number of active students each study program, as well as predictions of the trend of study programs that are considered to represent the interests of new students, without first recalculating the amount of the main burden of each study program.

3. The activities of the main academic unit and any academic support units related to the calculation of the main burden of each study program that can be identified at X University.

To implement ABC, the first thing that must be done is to determine the activities carried out by X University (*Ernst and Young, 2000*). Based on the data sources of semi-structured interviews, researchers as participant observations, and analysis of internal documents of X University, researchers obtain complete data on the activities of the main academic units and academic support units related to the calculation of the cost of each study program that can be identified at X University.

4. Allocating the costs of supporting unit activities to the main academic units (all study programs) at X University using ABC.

The cost of each support unit before being charged to the main unit must be traced and calculated first so that the total cost of the support unit reflects the direct costs of the supporting units plus costs incurred due to interactions between support departments. Assignment of support unit costs to the main unit can choose to use the three alternative methods of allocation of appropriate support department costs, based on cost and benefit considerations (cost of measurement vs cost of error), namely: direct method, sequential method, or reciprocal method. *method (Hansen and Mowen, 2019; Horngren and Rajan, 2022)*. Furthermore, the total costs

of the new support departments (direct costs of support units + allocation costs between support units) are charged to the main unit (all study programs) at X University.

Based on the search results that have been carried out by the researchers, it was found that several costs from the support units which were initially charged to the main unit with the cost driver the percentage of the number of active students in each study program, turned out to be traceable by direct tracing to the main unit, or it could be said that there was an indirect cost change. be direct costs. The search results also show that there has been an over / (under) allocation of, among others, the imposition of salaries/THR/bonus fees, employee benefits, scholarship fees, research costs, literature fees, further study fees, and employee development/welfare costs in each study program. , especially the over-allocation of study programs that have the largest number of active students.

Furthermore, the implementation of Activity-Based Costing (ABC) at University X, after going through the first stage of identifying all activities, both main unit activities (all study programs) and supporting unit activities (all sections and institutions), as well as assigning resources to activities in full, then the second is to determine the appropriate cost driver to be used to allocate the cost of the activities of the support unit (support department) in full to the cost object or main unit (main department = all study programs) (*Ernst dan Young, 2000*).

For the selection of cost drivers in order to allocate the cost of supporting unit activities to the main unit (all study programs), the researcher has used considerations of the cost of measurement comparison with the cost of error. This consideration included the use of the same cost driver for a combination of activity costs from several related supporting units whose costs were relatively small.

For activities at the facility level (facility-level activities), the researcher grouped these costs into the activity costs of supporting units and then charged them to the main units using the allocation method, which is proportionally distributed based on the number of active students in each study programme relative to the total number of active students at University X.

Similarly, for activity costs of supporting units that cannot be traced either by direct tracing or by driver tracing to the main unit (no suitable cost driver was found because there is no causal relationship between costs and cost objects), the allocation method was chosen (allocated evenly) to the eight study programmes, considering the ease of implementation and the relatively low implementation cost. ...(*Kaplan dan Anderson, 2007; Hansen dan Mowen, 2019*).

5. The cost of each study program at X University, calculated by ABC, is compared before using ABC.

The cost pool is a combination of certain activities in an organisation that have the same activity driver. To simplify the calculation of the cost of each study program, the activities of the supporting units can first be grouped into cost pools based on the cost driver equation as follows. (Hansen dan Mowen, 2019).

Complete details of support unit activities and allocation of support unit costs through the following stages:

Stage 1: Total Supporting Unit Cost = Direct costs of supporting units plus / (subtracted) activity costs that can be traced to supporting units (converting indirect costs to direct costs) and indirect costs of supporting units, and Stage 2: Allocating the Total Cost of Supporting Units to the Main Units (all Study Programs) using the Direct Method of Allocation with the appropriate cost driver.

The results of calculating tuition cost per student per semester using the ABC method for all study programmes at University X during the January–December 2023 period is

Table 2. Calculation of Tuition Fee / Semester using The ABC Method

NO	STUDY PROGRAM	January – December 2023					
		Direct Operational Cost	Supporting Cost (Allocation with Driver Directly to Study Program)	Supporting Cost (Allocation Proportional Number of Students in the Study Program)	TOTAL COST (Direct+ Indirect/Supporting)	Tuition Fee /Student /Year	Tuition Fee /Student /Semester
1	S1/DIV - 01	200.064.658	4.395.961.183	5.465.230.023	10.061.255.863	25.732.112	12.866.056
2	S1/DIV - 02	98.202.748	1.594.052.042	1.216.048.624	2.908.303.414	33.428.775	16.714.387
3	DIII - 01	59.288.162	1.511.426.702	447.282.252	2.017.997.117	63.062.410	31.531.205
4	S1/DIV - 03	191.246.272	1.855.310.425	3.110.009.412	5.156.566.108	23.175.578	11.587.789
5	S1/DIV - 04	110.011.767	1.215.123.355	503.192.534	1.828.327.656	50.786.879	25.393.440
6	S1/DIV - 05	120.020.136	1.490.337.618	684.900.949	2.295.258.703	46.842.014	23.421.007
7	S1/DIV - 06	68.349.560	1.613.465.572	1.425.712.180	3.107.527.312	30.465.954	15.232.977
8	S1/DIV - 07	50.671.470	1.272.950.845	377.394.401	1.701.016.716	63.000.619	31.500.310
TOTAL		897.854.773	14.948.627.742	13.229.770.374	29.076.252.890	30.719.760	15.359.880

By applying the ABC method, it shows an increase in the accuracy of the calculation of the cost of each study program with the detection of over and under allocation (Al-Halabi and Shaggour, 2023; Audiana, Y., & Lestari, U.P., 2021) when compared to using the initial method which simply charges the costs of supporting units to the main unit with the direct method of allocation.) which is only based on the unit level activity cost driver, the percentage

of the number of active students of each study program to the total number of active students of University X, without acknowledging the interaction between the supporting units and without paying attention to the activities of each of the main and supporting units. The end result resulted in the study program with the largest number of active students at University X experiencing over-costing, which means that the study program student must share the costs that should be charged to students from other study programs, or in this case, there has been a cross-subsidy between study programs. On the other hand, other study programs with relatively few active students are undercosting.

6. Implications for the management after receiving information on the cost of each study program at X University the results of ABC calculations were compared before using ABC.

Over and under allocation (distortion) in the calculation of the principal cost per semester for each University X study program, ultimately also has an impact on over and under allocation (distortion) in the principal cost per student for each study program according to the same percentage as over and under allocation (distortion). Basic expenses per semester for each study program.

Distorted fee assignments as described above can result in wrong management decisions and poor evaluations, especially related to the consideration of determining student SPP per semester for each study program which will directly or indirectly affect the continuity of University X's operations, especially in the midst of in today's competitive world of education. (*Atrill, P., and McLaney, E., 2022 ; Cagwin, D., and Bouwman, M.J., 2021*).

The results of research that have been carried out related to the calculation of the cost of each study program using the ABC method are expected to get attention and be applied to the development of University X, as well as become the basis for management considerations in determining the tuition fee per semester for students of each study program.

CONCLUSIONS AND ADVICES

Conclusions

Based on the analysis of cost allocation using the Activity-Based Costing (ABC) method to improve the accuracy of study programme cost calculation at Universitas X, several conclusions can be drawn:

- a. Universitas X has applied a simplified approach in calculating study programme costs using Functional-Based Product Costing. In addition to assigning direct costs to each study programme, support department costs have been allocated to main academic units using the direct method of allocation with a uniform unit-level activity driver, namely the proportion of active students in each programme. This approach has ignored interactions among support units and has not adequately considered the activities performed by either main or support units.
- b. The existing costing policy has resulted in cost distortion across study programmes. Study programmes with a larger number of active students have indirectly borne costs that should have been allocated to programmes with fewer students.
- c. The implementation of hybrid blended learning has not reduced operational costs because offline learning has continued alongside online learning. This situation has led to additional investment in supporting technology and infrastructure for distance learning, thereby preventing a reduction in semester-based educational costs. Observations indicate that operational cost reduction is more feasible when programmes are delivered fully online rather than through hybrid blended learning.
- d. A comparison between ABC-based costing and the previous costing approach shows the presence of overcosting and undercosting among study programmes. Allocating support unit costs solely based on the number of active students has created cross-subsidisation, where programmes with larger enrolments subsidise those with smaller enrolments.

Advices

Considering the research findings, time limitations, and the analysis of the mini research questions, several recommendations are proposed for Universitas X:

- a. Universitas X is encouraged to adopt the Activity-Based Costing method in allocating support unit costs to study programmes, as ABC provides more accurate cost information and improves the cost assignment process through the use of appropriate cost drivers.

- b. For study programmes experiencing under-allocation, Universitas X may implement corrective strategies such as adjusting Educational Operational Costs per semester and strengthening collaborative efforts across institutional units to increase student enrolment. Promotional and programme socialisation activities should involve all relevant support units rather than relying solely on the student admission department.
- c. For future research, researchers may expand the research period and dataset related to the utilisation of Activity-Based Costing (ABC) implementation in improving the accuracy of cost calculation for higher education study programs, as one of the key factors for achieving competitive advantage in the era of digital and technological development.

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