INTRODUCTION
The basic concept of higher education has two important things that need to be studied or analyzed, namely overall education costs (total cost) and unit costs per student (unit cost). Unit costs at the school level are aggregate costs of school-level education, whether sourced from the government, parents, and the community, which are incurred for the implementation of education in one school year. Unit cost per student (unit cost) is a measure that describes how much the costs allocated to the education unit are effectively absorbed for the benefit of students in pursuing education. Because the unit cost of education is obtained by calculating the number of students in each unit of education, the unit cost size is considered standard and can be compared between one unit of education with another unit of education (FATTIAH, 2008, p. 24).

Student vocational education activities, applying a model of calculating the cost of education based on the Activity Based Costing method, formulates information on the cost of student education costs, in a valid, transparent and accountable manner in the planning and budgeting process for stakeholders. By identifying educational activities, both those related directly to academic and supporting, including the cost driver (the trigger of the cost) so that it can be traced the burden of costs borne by students. The average proportion of high indirect academic costs of 46.45% compared to the proportion of 33% shows the need for identification of activities and efficient costing because these allocations are directly borne by each student (ARDIANSYAH, 2013).

Calculation of unit cost of education for Bachelor Degree study programs through the TDABC method of unit cost of education for Bachelor Degree of Economics study programs using the TDABC method and currently there is relatively no significant difference. However, this information can be used as an evaluation material for management about the existence of other faculties that use more resources and a smaller number of students (CATATA, 2017). Conventional Activity-Based Costing System (CABC) and Time Driven Activity-Based Costing System (TDABC) are different. The analysis was carried out in terms of the ability of the two systems to be applied in the managerial decision making process. CABC consists of two stages of cost allocation to cost objects which make the process more expensive and consume more time than TDABC. However, in the first stage, the cost of resources assimilated for activity has the advantage of providing activity cost information that is very useful for managing costs. On the other hand, TDABC introduced by Kaplan and Anderson (2007) is claimed to be easier and faster than CABC because the cost of resources is assigned directly to the cost object. Although TDABC can be applied easily, this system ignores the process of determining the cost of activities contained in the first stage of the CABC. This neglect makes TDABC lose its ability to provide relevant information for decision making (VILLARMOIS, LEVANT, 2007).

Education Cost Calculation which is calculated using the Traditional Method and Activity Based Costing Method there is no significant difference between the costs calculated using the Traditional Method and the Activity Based Costing Method. The results of the comparison show that there are eleven Education Costs per Student who are undercosted and ten Education Costs per Student who are overcosted towards the calculation results using the Traditional Method. From the research it is known that the Activity Based Costing Method presents information on cost consumption per student on each skill package and the level is
more accurate and detailed compared to calculations using the Traditional Method (FUJII, RUSSER, 2002).

**INTRODUCTION**

Activity Based Costing began to be recognized in 1986 as a result of a project initiated by the Consortium for Advanced Manufacturing-International (CAM-I). CAM-I is a large association of companies dedicated to the advancement of manufacturing technology. CAM-I members include Boeing, General Electric, Kodak, LG, several US government agencies, and most accounting firms. CAM-I put together a project team to improve cost accounting techniques. The team included, among others, Robert Kaplan from Harvard, Robin Cooper (Claremont Graduate School), and James Brimson as project director. Each of these people became productive writers about ABC. The National Association of Accountants, now called the Institute of Management Accountants (IMA) is working with CAM-I on the ABC project. Although CAM-I members have largely moved to other projects, the IMA continues to promote the ABC method in programs and publications. IMA is a certification body for a Certified Management Accountant (CMA) designation in the United States. CMA-Canada provides the same name certification in that country (CARTER, USRY, 2006).

The collection of cost accounting techniques that became ABC in the late 1980s is nothing new or revolutionary. Activity based costs consist mostly of common sense techniques developed by many financial managers to respond to certain needs of their own companies. Most of these financial managers work independently of each other, creating methods that make sense according to their individual situations. Although originating from the manufacturing sector, ABC techniques also apply to the service sector. Health services especially industries used certain ABC techniques long before 1986. Before health care providers began paying based on hospital diagnoses in the mid-1980s, they were paid based on the reimbursement process. The step-down variance analysis is a major step towards the development of ABC, is part of the health report reimbursement of costs required by the hospital even before the hospital’s financial manager has a spreadsheet tool to automate the cost calculation process. Step-down analysis led to the evolution of what became known as ABC. Activity based costs are a logical method of cost assignment. Each organization that uses ABC charges in a logical way for each organization (CARTER, USRY, 2006).

According to Carter and Usry (2009, p. 296), Activity Based Costing System is a cost calculation system in which more than one number of overheated cost shelters is allocated on a basis that includes one or more factors that are not related to volume (non-volume related factor) *”. Meanwhile, according to Gaspersz (2006, p. 156) Activity Based Costing is a method that measures the cost of an individual product (goods / service) based on the activities that produce that individual product. Assumptions that underlie ABC are activities that control costs, where the costs are controlled by individual products, then the individual products are controlled by the product’s customers. Activity Based Costing provides information about the activities and resources needed to carry out these activities. Activity is any event or transaction that is a cost driver (cost driver) that is, acts as a causal factor in spending costs in the organization. These activities become a point of gathering costs. In the ABC system, costs are traced to activities and then to products. The ABC system assumes that it is activities, which consume resources rather than products. ABC system makes the activity as the center of its activities and also to account for costs. Because activities are not only found in manufacturing companies, and are not limited to the production stage, according to Mulyadi (2003, p. 51-52), the ABC system can be utilized in non-manufacturing companies and includes costs outside production. Still according to Mulyadi (2003, p. 49), ABC systems are designed for various types of companies and use activities as a basis for measuring, classifying, recording, and providing cost data. According to Carter and Usry (2006) identification of resource costs for various activities can be done by classifying all activities according to the way these activities consume costs.

According to Kaplan and Andersen (2007), many companies have begun to delay or even leave ABC due to the expensive and complex implementation process that companies must carry out. This became a challenge for Robert Kaplan and Steven R. Anderson who were the initial initiators of the emergence of ABC. The two men then began to modify the complexities faced by ABC. In 2007, the two figures introduced a new concept, Time Driven Based Costing.
This concept simplifies the cost process by eliminating the need to conduct interviews and surveys of employees to allocate overhead costs through activities based on cost objects such as orders, products and customers.

Langmaak, Wiseall, Bru, Adkins, Scanlan, Sóbester (2013) also states, that every process of estimating the risk of error. One minute is recorded wrong in the estimated time multiplied by the thousands of transactions and the results can be very different. In fact, such simple estimation errors may be greater than that and will be under the traditional ABC method. When multiplying the time needed to do unit income source activities, we can calculate individual activity and transaction costs. The time needed to carry out these activities is an estimate for each particular case. Modeling time equation is how the time driver is managed by the time spent by the activity. In this way we can count unlimited number of drivers. The time equation can mask the structure of complications of an activity. After using TDABC, we can emphasize the costs of the staff.

This method needs to make a content analysis of all activities in its application. We must define all possible variations of current activities and time factors. Thus, we can estimate and determine the consumption of one factor through proof of calculation by Intervention Resource Planning (ERP) and Customer Relationship Management (CRM) or by measuring time (LANGMAAK, WISEALL, BRU, ADKINS, SCANLAN, SÓBESTER, 2013) showing that certain vendors can do TDABC. Some major vendors of costing devices can calculate costs through a double-assignment method, which can drive costs based on the number of drivers collected or pulling out a cost model based on an equation whose references are automatically updated. Users have the choice to choose the method for different parts of each model. The application of the TDABC method has steps according to Brugemann (2005):

a. Cost assessment through information on expenditure sources on available capacity.

b. Assessment of time for variations needed in carrying out activities.

c. Multiple unit costs from a particular source of income with total time consumption of concrete variations in running the process and summarizing the costs for each source of consumption.

Hansen and Mowen (2006, p. 129-130) mentioned that before doing an activity based two stage process, it is necessary to identify the activity. Activities are work units in an organization and can also be said as a collection of actions that are useful for managers for planning, controlling and decision making. Activity data will be arranged in an activity dictionary detailing the activity list, activity description, activity classification, cost object and activity driver.

LITERATURE REVIEW

The number of activities carried out by the Faculty in the administration of education has triggered costs in the administration of education. Education costs are expenditures and financial use for the administration of education whose sources come from the government, individuals, and the community.

The calculation of education costs based on Activity Based Costing (ABC) activities is widely criticized for several weaknesses, including ignoring the potential of unused capacity, assuming resources to work in conditions of full capacity, and indirect costs (overhead) that cannot be charged directly to products / services (examples: employee salaries, wages, overtime pay, health benefits, leave benefits, bonuses, and incentives, etc.). The weakness of the ABC gave rise to the idea of refining ABC called Time Driven Activity Based Costing (TDABC). According to Kaplan and Anderson (2007), TDABC is able to provide solutions to ABC weaknesses because of the estimated time needed for each activity as the main cost driver, called the time driver. From the description, there are many advantages possessed by TDABC so that it is potential to be applied to Educational Institutions.

For the sake of developing and improving the quality of the Denpasar Indonesian Art Institute (ISI), a calculation is needed to determine how much education costs are in accordance with the level of operational needs of the Indonesian Arts Institute (ISI) Denpasar. This cost...
calculation is done by comparing the Activity Based Costing method with the Time Driven Activity Based Costing method.

**Figure 1. System Conceptual Framework of Activity Based Costing**

![Diagram showing the system conceptual framework of Activity Based Costing.](source)

**Source:** Directorate General of Higher Education Ministry of Education and Culture (2012).

**Method of Time Driven Activity Based Costing**

TDABC is able to simplify the costing process by only charging resource costs directly to cost objects based on activities using time equations. At first glance, the flow of TDABC is like a traditional costing approach, but it differs in the basic logic of the calculation. The form of the analysis model of the TDABC conceptual framework is costing as shown in Figure 2.

**Figure 2. Charges of Cost Calculation using TDABC**

![Diagram showing the charges of cost calculation using TDABC.](source)

**Source:** Search data.

Figure 2 shows the relationship between resources (resources) to the cost of the object incurred. Resources that support the activity of academic departments consist of; labor equipment, support, supplies, and facilities. To complete the implementation, it is supported
by a support department consisting of: academic, administrative, auxiliary, and functional-support. Meanwhile, academic departments consist of absorbed resources and support departments, in the form of research grand & development, class preparation, instruction, student support, and academic improvement. Furthermore, the academic department will form a cost object (such as: college, class, roster, and student) which are triggered by activity cost drivers.

**METHODOLOGY**

This study uses a qualitative-explorative research method which aims to systematically describe the facts and characteristics of the object being studied appropriately. According to Moleong (2009, p. 5) qualitative research is research that uses a naturalistic approach to search for and find understanding or understanding of phenomena in a particular contextual setting. This research process shows the context of the study with a focus on understanding, thinking, and perceptions of researchers, where the results of this research can be in the form of concepts, new theories, new discoveries, applicable knowledge, as well as practical solutions from various studies or other scientific thought to solve problems faced. The research design used was observation and case studies. Observations made by direct observation of operational activities and conduct research on existing problems through case studies. According to Yin (2004, p. 1) a case study is a more suitable strategy if the subject of a research question concerns how or why. It is hoped, through this research, it can help the university to monitor a much better cost allocation when using the Time-Driven Activity Based Costing method. The place of this research was conducted at the Indonesian Institute of Arts Denpasar, which is located at Jalan Nusa Indah Denpasar 80235. The time of the study begins in September 2018 until February 2019.

The instruments used in this study are financial and non-financial data which are formulated to reach the following stages of research and analysis:

1. Activity Identification and Classification
2. Charging Costs to Activities and Charging Costs between Activities
3. Collection of Costs in a Cost Pool
4. Cost Driver Identification and Calculation
5. Determination of Student Unit Cost Per Level Per Skill Package Based on Activity Based Costing

At this stage, all costs collected based on activities that have been reviewed and constructed and grouped will be allocated to produce the amount of costs incurred by each skill package using costs pre-calculated drivers.

**ANALYSIS AND FINDING**

**Education cost calculation with activity based costing method**

The Indonesian Art Institute has eight study programs which are divided into 2 faculties, namely the Faculty of Fine Arts and Design (FSRD) which include five study programs (Visual Communication Design, Interior Design, Fine Arts, Arts Crafts and Photography) and the Performing Arts Faculty (FSP) which includes three study programs (Dance, Karawitan Art and Pedalangan Art). The following are data related to tertiary institutions, namely the number of students and study programs available at the Indonesian Institute of the Arts, which can be seen in Table 5.1:
Determinants of single tuition fees for university in Indonesia through ABC and TDABC system

<table>
<thead>
<tr>
<th>No</th>
<th>Program</th>
<th>Number (person)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visual Communication Design (DKV)</td>
<td>241</td>
<td>28.97</td>
</tr>
<tr>
<td>2</td>
<td>Interior Design (DI)</td>
<td>92</td>
<td>11.06</td>
</tr>
<tr>
<td>3</td>
<td>Pure Fine Arts (SRP)</td>
<td>122</td>
<td>14.66</td>
</tr>
<tr>
<td>4</td>
<td>Craft Arts (KS)</td>
<td>21</td>
<td>2.52</td>
</tr>
<tr>
<td>5</td>
<td>Photography (FGR)</td>
<td>73</td>
<td>8.77</td>
</tr>
<tr>
<td></td>
<td>Total FSRD</td>
<td>549</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dance (TR)</td>
<td>116</td>
<td>13.94</td>
</tr>
<tr>
<td>7</td>
<td>Musical Instruments (KRW)</td>
<td>132</td>
<td>15.87</td>
</tr>
<tr>
<td>8</td>
<td>Puppetry (PDL)</td>
<td>35</td>
<td>4.21</td>
</tr>
<tr>
<td></td>
<td>Total FSP</td>
<td>283</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>832</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Institute of Arts Denpasar

Calculation of Education Costs with Activity Based Costing Method according to Hansen and Mowen (2009, p. 176-182) consists of four stages, namely:

1. Activity Identification and Activity Attributes
   Activities are divided into two, namely primary and secondary activities. Primary activities are activities that are used by students, while secondary activities are activities that are used by other activities (HANSEN, MOWEN, 2009, p. 179).

2. Charging Costs to Activities
   Costs at the Indonesian Art Institute in Denpasar are divided into two, namely direct costs and indirect costs, direct costs consisting of HR, BHP, facilities, and buildings, while indirect costs include, depreciation costs, operational costs, maintenance costs, as well as costs other activities.

3. Collection into Activity Cost Pool
   One way to reduce the complexity of calculating Education Costs based on the Activity Based Costing Method according to Hansen, Mowen (2009, p. 186) is to collect activities with the same consumption ratio into a cost pool. Therefore, the Activities in Teaching and Student Activities are grouped in a Cost Pool.

4. Determination and Calculation of Cost Drivers
   The final stage of Activity Based Costing is to impose costs on products, in this case students because students are connoisseurs of services produced by tertiary institutions. Before being charged to students, the cost rates of the primary activities are calculated first in accordance with the proportion of usage activities (HANSEN, MOWEN, 2009, p. 181).

**Primary primary activities include**

a. HR costs. HR costs include salaries received by teaching teams from each study program. The loading uses the effective hours of teaching (effective hours multiplied by the number of teaching staff), the method of loading is to multiply the average HR rate by the number of students per study program.

b. Facilities costs. Facility costs directly relate to the teaching and learning process carried out by the teaching team to students in each study program. Facilities costs include lecture facilities and practical facilities.

c. Consumable costs. Consumable material costs are costs incurred to support the lecture and practicum processes such as modules and learning tools.

d. Building facility costs. Building costs include lecture rooms, labs and mandala cubes (exhibitions). Loading used is the floor area.

Secondary activities involve depreciation cost, operational cost, maintenance cost, and activity cost.
DISCUSSION

Apart from the benefits that are of interest to the company, ABC is not accepted as a whole. Many companies fail to adopt ABC or even leave ABC due to rejection from both organizations and individuals. However, the rejection of the adoption of ABC is rational and logical. ABC system is a system that requires expensive costs to build, complex to run and difficult to modify. Following are the weaknesses of ABC according to Kaplan and Anderson (2007):

- a. The interview and survey process is a process that consumes a lot of time and money.
- b. Data from the ABC model are subjective and difficult to validate.
- c. Data, processes and reports produced require high costs.
- d. Most ABC models are local and not integrated with company profitability.
- e. The ABC model cannot be easily modified to accommodate changing situations.
- f. A terrorist model is not appropriate when ignoring potential unused capacity.

With the stipulation of the Single Tuition Fee, the tuition fees paid by students will be of fixed value from the beginning to the end of the course. Single Tuition Fee is intended to ease the burden of students on education funding because with Single Tuition Fee it is expected that there are no other payments that must be paid by students. The implementation of the Single Tuition Fee is expected to be more effective because the payment process is carried out by students only once each semester with a fixed amount from the beginning to the end of the study program so it is expected that all costs can be planned well ahead.

With a variety of types of expertise programs at the Indonesian Art Institute Denpasar raises the need for different costs for each existing expertise program. This makes managing funds at the Indonesian Arts Institute Denpasar more complex. However, the Indonesian Institute of Arts Denpasar has the same responsibility as other Public Universities to present information on costs in an informative and transparent manner. The management of Public Universities financial budget in a simple way, which is only based on the needs needed to carry out various activities allowing the funds used are not on target so that over-absorption or under-absorption can occur. This can cause the tuition fees charged to students to be inaccurate. Other facts show that in 2013 and 2014 the fees charged to students through the Educational Development Contribution on each expertise program were generalized, even though the needs for each skill program were different. This shows that the inaccuracy of charging costs can lead to improper decision making.

A part from the benefits that are of interest to the company, ABC is not accepted as a whole. Many companies fail to adopt ABC or even leave ABC due to rejection from both organizations and individuals. However, the rejection of the adoption of ABC is rational and logical. ABC system is a system that requires expensive costs to build, complex to run and difficult to modify. Following are the weaknesses of ABC according to Kaplan and Anderson (2007):

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- f. A terrorist model is not appropriate when ignoring potential unused capacity.

The advantage of Time Driven Activity Based Costing is that TDABC shortens the time it collects data, using only one cost driver that is time based. While the weakness of Time Driven Activity Based Costing is the estimation of time errors made in calculating the time on each resource.

The general difference between TDABC, ABC System and traditional system is the homogeneity of costs in one costing place. ABC System is a two-stage cost calculation system, while a traditional system can be a one or two-stage calculation system. In the first stage in the ABC System, an activity cost shelter is formed when resource costs are allocated to activities based on resource triggers. In the second stage, the activity costs are allocated from the shelter of the activity costs to the product or other final cost object. In contrast, the traditional cost system uses two stages if another department or cost center is established (CARTER, 2009).
TDABC also has a two-stage calculation system but what distinguishes TDABC from the others is the cost driver used is a time driver. TDABC and ABC System have in common the most distinguishing thing is in the determination of cost drivers and TDABC does not use the classification of activities.

Distortion in calculating education costs, among others, according to Susilo (2010) is due to the classification of types of costs that do not refer to national education standards according to Government Regulation number 19 of 2005, and the basis of the allocation of costs to students does not reflect academic activities carried out so that it does not support differences costs between study programs significantly. The Indonesian Institute of Art Denpasar as one of the education units to deal with these conditions, reflected, among others, by the size of the Single Tuition Cost with significant differences. This condition is not supported by clear calculations because in fact the activities in the majors in each field are very clearly different in terms of type, intensity and supporting material. Therefore, we need a calculation model that can provide accurate cost information. With the information on costs that are transparent and informative.

**CONCLUSION AND RECOMMENDATION**

Calculation results can be compared in two categories, namely overcosted and undercosted. There are six costs that are categorized as undercosted and two costs that are categorized as overcosted. Significant differences appear between the ABC System and TDABC. Calculation with the TDABC system is more efficient and simpler than the ABC system. The Indonesian Institute of Arts Denpasar should use the TDABC System in calculating tuition fees, meaning that in terms of competition between tertiary institutions, especially private tertiary institutions, it could be considered to set different tuition fees, with it expected that tuition fees paid by students can cover all costs incurred by the institution. This study provides insight for the government to use the results of calculations based on the Time Driven Activity Based Costing Method as the basis for determining the amount of State University Operational Assistance. The Time Driven Activity Based Costing Method produces more accurate calculation results and contains more detailed information. Therefore, ISI Denpasar is expected to begin applying calculation methods based on Time Driven Activity Based Costing. The advantages of the TDABC system are:

1. Very easy and simple to implement;
2. Inexpensive and easily updated;
3. Easily validated by direct observation of the estimated model of the time unit;
4. Provide information on process efficiency and capacity use, predict demand for resources, so that ISI Denpasar can budget for resource capacity based on the predicted number of orders and their complexity;
5. Focus on process efficiency and capacity utilization;
6. Predicting future resource demand based on quantity predictions with a high level of complexity in customers, products, segmentation, processes and large numbers of people.

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Determinants of single tuition fees for university in Indonesia through ABC and TDABC system

Resumo
O objetivo deste estudo é explorar e comparar o Custeio Baseado em Atividades (ABC) com o Custeio Baseado em Atividades de Impulsionador de Tempo (TDABC) como determinantes das Taxas de Ensino Único em Universidades Públicas da Indonésia. Foi realizada uma pesquisa envolvendo oito programas de estudo no Instituto Indonésio de Artes Denpasar Bali, Indonésia. Os dados coletados são custos comparados por aluno com base nos cálculos usando as abordagens ABC e (TDABC). Os resultados indicam que as vantagens do Sistema TDABC são: Muito fácil e rápido de implementar, pouco caro e facilmente atualizado, facilmente validado pela observação direta do modelo estimado da unidade de tempo. O TDABC não é comumente usado na Indonésia para determinar o custo de uma única faculdade porque as vantagens e benefícios do TDABC não foram exploradas. Espera-se que esta pesquisa beneficie os reguladores de finanças para os determinantes das Taxas Únicas de Ensino nas Universidades Públicas.


Abstract
This study purpose to explore and comparison between Activity Based Costing (ABC) with Time Driver Activity Based Costing (TDABC) as determinants of Single Tuition Fees at Public Universities in Indonesia. A survey involving eight study program in the Indonesian Institute of Arts Denpasar Bali, Indonesia was conducted. The data collected are compared costs per student based on the calculations using by ABC and (TDABC) approaches. Results indicate that the advantages of the TDABC System are: Very easy and fast to implement, not expensive and easily updated, easily validated by direct observation of the estimated model of the unit of time. TDABC is not commonly used in Indonesia to determine the cost of a single college because the advantages and benefits of TDABC have not been explored. This research is expected to benefit the regulators of finance to determinants of Single Tuition Fees at Public Universities.

Palavras-clave: Costeo basado en actividades (ABC). Coste basado en actividades del controlador de tiempo (TDABC). Tasas de matrícula única.

Keywords: Activity Based Costing (ABC). Time Driver Activity Based Costing (TDABC). Single Tuition Fees.