Implementation Study of Activity Based Costing System to Define Indirect Costs on Ship Repair Industries

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Abstract. Good quality, the right turnaround time, and affordable service costs are three important points that must be paid attention to in repair shops offering their services. In determining the selling price of repair services, companies need accurate information about the cost of goods manufactured, which consists of direct costs and indirect costs. In general, the imposition of indirect costs to products uses a traditional cost accounting system so that costs distortions often occur. With the development of existing knowledge, companies must be able to increase their competitiveness and find alternative methods than traditional cost accounting systems. The activity based costing method developed and became a cost accounting method by assigning costs to activities based on the consumption / use of resources. First, activity identification is carried out based on existing business processes, both direct and supporting repair activities. Second, from the results of the identification of existing activities, identification of needs that trigger an activity that can be called an activity driver is carried out. After identifying the activity driver, the type of activity in the ship repair process is obtained which affects the high indirect cost expenditures. By using the activity based costing method, the indirect cost value on ship 1 is IDR 78,994,805, - and on ship 2 of IDR 57,890,169, -. These values are true values and can be traced to each activity through the use of resources. From these results it can be seen that the value of indirect costs when calculated by the activity based costing method produces a smaller value when compared to the existing method. On ship 1, using the activity based costing method, indirect costs decreased by 44% from the calculation of the existing conditions and on ship 2 decreased by 38% from the calculation of the existing conditions.

1. Introduction
Industries world today is experiencing a quite significant development. So this requires a moving company to be able to compete in showing good company credibility. In the shipping industry sector, especially in ship repair services, good quality, correct turnaround time, and service costs are three important points that must be paid attention to by repair shops in offering their services, especially in terms of prices that are able to compete with other repair shipyards. Because if the costs incurred for work are too high it will cause the price of the company to be unable to compete with others. So that there are many things that must be considered in the planning, including the types of repair activities carried out, what business processes occur in them, the use of labor and working hours, the use of shipyard facilities, the use of raw materials and supporting materials must be calculated properly. These are components that trigger costs in the ship repair process and these cost components are divided into direct costs and indirect costs. In general, the imposition of indirect costs to products uses
a traditional cost accounting system so that cost distortions often occur [1]. As a result of this inaccurate indirect costing, cost distortion occurs, causing cross-subsidies of the profits earned by the company to cover the indirect costs it incurs.

With the development of existing knowledge, companies must be able to increase their competitiveness and find alternative methods than traditional cost accounting systems. Recently, companies have replaced their traditional cost accounting systems and developed them into activity-based cost management systems, known as Activity Based Costing or ABC [2] which is a method of measuring costs and performance of activities and other objects. So that the cost accounting system with this method is to charge costs to activities based on consumption / use of resources and charge fees to products / services produced based on the use of consumption activities. Therefore, along with the development of existing knowledge, the ship repair industry requires a new method in determining production costs.

Based on the background that has been mentioned, this study aims to, firstly, analyze the methods and systems currently applied by the ship repair industry in determining indirect costs, then identify activities that affect indirect cost expenditures in the ship repair process based on the method. activity based costing, then the last one determines the formulation of the approach in determining indirect costs in the ship repair process based on the activity based costing method.

2. Literature Review

2.1. Ship Repair

In general, ship repair activities in the shipyard based on the Ships Work Breakdown Structure are grouped into several activities consisting of [3]:

1. Drafting Activities
2. Construction work
3. Machining Works and Propulsion Systems
4. Piping Work
5. Electrical work
6. Public Services
7. Cleaning and painting of the stomach
8. Outfitting work / ship equipment

2.2. Cost Concept

In producing goods and services, of course, a company cannot be separated from the production costs it must incur. Some experts argue that this cost concept itself, according to [4] opinion, is defined as cash or cash equivalent value sacrificed to obtain goods or services which are expected to provide current or future benefits to the organization. It is also in line with opinion [5] where cost is defined as an exchange rate, expense, or sacrifice made to ensure the benefit that is reflected as depreciation of cash flows or other assets. The success of a company in planning and controlling costs depends on a thorough understanding of the relationship between costs and existing business activities. Study of the impact of business activities or costs, generally results in the classification of each expense as fixed costs, variable costs and semi-variable costs [6].

2.3. Indirect Costs

Indirect production costs are all manufacturing costs associated with cost objects but cannot be traced to cost objects in an economical manner. In other words, indirect costs are indirect material costs, and indirect labor and other costs that are not visible and are needed to support the successful completion of the production process. Indirect costs are divided into several things including [7]:

1. Indirect material costs are costs incurred for materials that support the success of the production process but do not become an integral part. Indirect material costs in the shipbuilding industry
include fuel costs for diesel welding motors, electricity costs for driving production equipment / facilities and lighting.

2. Indirect labor costs are indirect labor costs used for production process activities, but are needed to support the success and smoothness of the production process, including marketing personnel costs, calculation / invoice costs.

3. Other costs that are included in indirect costs that arise in the completion of the production process and are not classified as indirect material costs or indirect labor costs. In a shipyard company, these costs include maintenance costs, depreciation costs, research and development costs, insurance costs. Activity Based Costing System

2.4. Activity Based Costing System
Activity Based Costing or ABC is defined as a cost calculation system that focuses on activities carried out to produce a product, in other words this system imposes costs on activities based on consumption or use of resources and imposes costs on cost objects [1]. Products or services that are produced are based on the use of activity consumption, so it can be said that this system recognizes a causal relationship between cost drivers and activities. In accounting, cost drivers are factors that give rise to costs and can be used to allocate variable costs and indirect costs to a product [8]. Traditional accounting systems do not have the flexibility to show multiple cost sets and then demonstrate the application of these different costs to the cost groups for a product and service in the shipbuilding industry [9]. By using a variety of indirect cost groups and cost drivers, ABC can provide a more accurate cost description for financing and pricing a company's products and services [9].

This is of course different from the traditional cost calculation system where in this system the costs incurred for the production process are based on products and production volume. So when compared, ABC focuses more on tracking costs based on activities performed and resource use, while traditional cost calculation systems only track raw material costs and labor costs directly to each unit of output and indirect costs are allocated through imposition [10].

3. Research Metodology

3.1 Literature Review and Field Studies
Literature studies and field studies are needed in carrying out research, because the existing studies aim to provide an understanding of the concept of the Activity Based Costing method which will be implemented in determining indirect costs in the ship repair industry as well as knowing problems in the field which are the object of research. The literature study conducted by the author is related to the following topics of discussion:
1. Activity Based Costing and its application in determining the cost of goods manufactured
2. Application of activity based costing in the manufacturing industry
3. The components of the cost of production
4. Definition of indirect costs and their classification
The field studies undertaken to carry out this study consist of:
1. The process carried out in ship repair work
2. The flow of financing for ship repair work
3. Activities carried out during the ship repair process

3.2 Data Collection
This stage is the stage for collecting the data needed in carrying out the research, including:
1. Satisfaction note of ship repair work for 2 tugboats for the period September-December 2019
2. Planning for the number of workers and scheduling ship repair work
3. List of facilities and infrastructure needed for the ship repair process
4. Standard tariff for ship repair work owned by PT. XYZ
3.3 Data Processing

Furthermore, the authors processed the data obtained into several stages, including the following:

1. Identification and classification of ship repair activities
2. Identify the need for the activity or activity driver and classify the activity drivers into cost levels
3. Determine the trigger for the cost of each activity driver
4. Determination of the homogeneous cost groups of the activity drivers
5. Determining the cost rate for each activity driver
6. The calculation of indirect costs for ship repair processes is based on Activity Based Costing

3.4 Comparative Analysis of Existing Conditions with Activity Based Costing Method

From the data processing that has been done, the next step is to analyze the comparison between the existing conditions and the conditions to be developed, namely the ABC method. This stage is needed to determine whether the ABC system to determine the cost of production of ship repair works is better or even the same as the existing conditions. From this comparison, it will be obtained the things that differentiate the existing conditions with the ABC method in determining indirect costs for ship repair work.

4. Existing Condition of Ship Repair Financing

4.1 Indirect Costing Methods

Indirect costs are costs incurred for indirect material needs and indirect labor and other costs that arise and are required to support the success of the production process. At PT. XYZ itself there are different perceptions regarding indirect costs between the calculation department and the company's finance department. The differences in perception are:

1. The Calculation Department considers indirect costs that can be charged to a project as indirect costs related to repair work such as material handling, income tax from a project, the use of electricity and water for a project and the use of supporting materials and labor. project work.
2. The Ministry of Finance considers the indirect costs charged to the project are indirect costs that are not only related to project work but also indirect costs owned by the company, including permanent employee salaries, use of electricity and water for offices, water rental fees, asset depreciation value, corporate tax, building tax.

The difference of opinion between the calculation department and the company's finance department has caused indirect costs not to be included as a component in determining the cost of goods manufactured, so that their distribution is unknown. In practice, companies still experience confusion in positioning indirect costs as a component of the cost of production, because when the indirect costs are included in the calculation, this will make the value of the cost of goods manufactured higher and cause the selling price to be higher as well. With this high selling price, the company does not want to take the risk of being unable to compete with other similar companies' businesses. In addition, in determining the distribution of indirect costs for production purposes, the company still has not found an effective way so that indirect costs that are included as a component of the calculation are only electricity and water used for project purposes. So that until now, the determination of the indirect cost of a repair work has been done by taking a percentage of 20-30% of the existing tariff.

4.2 Method of Pricing for Ship Repair Services

In determining the selling price of the ship repair work owned, PT. XYZ uses the method generally used by other companies, namely still using the conventional method. As has been explained in the previous sub-chapter regarding the calculation of the cost of production for repair work, that the cost of production is the initial capital for production without any profit in it. The calculation of company profit or profit is obtained through the selling price at the standard rate for repair work owned by the company. The formulation of the selling price consists of three components including:
1. Cost of goods manufactured, calculated by the calculation department based on the repair list that has been made.

2. Indirect costs, which include taxes and other costs. In practice, companies take a range between 20% -30% of the fixed cost of production for these indirect costs themselves.

3. Margin, which is defined as the profit or profit earned by the company through ship repair services. The margin percentage is determined by the company directors and the calculation department only follows the provisions in the calculation.

So that from the three components, it can be formulated that the selling price = COGS + Indirect Costs (tax etc.) + Margin.

5. Identification and Classification of Activity

In calculating costs using an activity-based costing system, costs are not charged directly to the product, but use a two-stage process. The first stage is the process of identifying and classifying activities based on process groups and activity levels. Then the cost driver is chosen as the basis for tracking the costs of each activity to the product. In the second stage, the cost of each activity is carried out based on the amount of product consumption of the activities required.

5.1 Identification of Activities and Activity Drivers

Identification is carried out based on activities that occur during the ship repair business process. Activities in the ship repair business process are divided into two activities. First, activities that are directly related to the reparation process are known as direct activities. This type of activity is a type of activity that is easy to identify because it is visible directly on the ground and is listed in the satisfaction note. Second, activities that support the production process are activities classified as indirect activities. These direct support activities include the following:

1. Administrative activities for offering repair services, including searching for orders, preparation and execution of tenders, tender administration, calculation of cost calculations, bidding for repair lists and other activities related to offers of repair services.

2. Material and raw material procurement activities, this activity is related to ordering raw materials or materials, sending materials to shipyards, storing materials to warehouses, distributing materials to each workshop, and controlling the entry and exit of raw materials from the warehouse.

3. Production planning and control activities, this activity comes from the planning and supervision department in planning schedules and manpower requirements for ship repair work, production control, as well as compiling records of work realization and recapitulating the use of man hours.

4. Supervisor class / OS activities, including checking the test results of several ship components such as NDT on the propeller, balancing test on the propeller, and several other tests by the shipyard to the classification bureau. In addition, there is also a class or owner surveyor visiting the shipyard to carry out routine checks on the results of repair work.

5. OHS activities are activities of the K3 department in the supervision of occupational health and safety which are implemented by workers during the ship repair process.

6. Project manager activity, is the activity of the project leader who is in charge of ship repair activities carried out and controls the repair work so that it can be completed on time.

7. The activity of the head of the workshop is the activity of the head of the workshop as the person in charge of the work carried out by the workshop under him.

8. Product quality development activities are training activities for the development of the competence of production workers to maintain and even improve the quality of ship repair work.

9. After-sales administrative activities, activities that are classified into this activity include making realization of cost calculations (rekals), clarification and negotiation of rekals between companies and ship owners, invoices and payments.

10. Company management and administration activities, this activity is the result of the implementation of internal company support activities carried out by the company management. From the identification results, there are several processes including the executive process, which
is the process of compiling a map of the future business journey, resource management, and the company's administrative support process. Apart from identifying activities, identification of the needs of each activity is also carried out, such as direct and indirect materials, direct and indirect labor, equipment needs, and use of facilities for the ship repair process. The results of the identification of the activity requirements are called an activity driver or trigger for an activity. Table 1 below is an example of the identification results of activity triggers or activity drivers in the repair list offering activities:

| Activity:                        | Repair List Offering                                      |
|---------------------------------|-----------------------------------------------------------|
| Direct Material                 | Telephone charges, Computer power charges, Internet charges, Software License Cost |
| Indirect Material               | Marketing department executor                              |
| Direct Labor                    | Marketing department supervisor, Marketing department manager |
| Indirect Labor                  | Computer, Marketing Office                                  |
| Machine/Tools/Facility Use      | Computer Maintenance, Marketing Office Maintenance         |
| Facility Maintenance            | Computer Depreciation, Marketing Office Depreciation        |

5.2 Cost Level Classification
From the results of identification of activities and activity needs, it is obtained the indirect cost components that arise during the ship repair process. The existing activity drivers are grouped simply and then grouped into four levels of activity costs, namely unit, batch, product sustaining, and facility level costs:

1. Unit Level is the level of cost where this cost occurs repeatedly in each unit of product so that this type of cost can be charged to the unit. Types of costs that fall into this level include the use of bending machines, electric drills, office electricity, welding machines, small and large lathes, hand grinders, compressors, cutting machines, pipe bending machines, use of cranes and waterpump floating dock.

2. The Batch Level is the level of costs where this cost occurs in a product group, so that this cost must be distributed according to the number of units in one group. The types of costs included in this level include the salaries of indirect labor for the executive, supervisors and managers from the marketing department, calculations, production plans, project leadership, quality control, K3L, engineering, procurement, warehouse, and finance. In addition, the salaries of indirect workers in the field, such as forklift operators, waterpump operators, crane operators, transfer personnel, dockmasters, workshop checkers, lorry drivers and security personnel. In addition, there are also telephone fees, internet, fuel for lorries and forklifts, water use and use of stationery.

3. Product Sustaining Level, is the level of costs caused by product development activities. In this case, the output produced later is to maintain product quality or improve product quality. Costs that fall into this category are costs for providing production training.

4. Facility Level, is the level of costs at the facility level where these costs arise due to the use of facilities during the production process. Costs that fall into this category include depreciation and maintenance of machines / equipment and offices and production workshops.
5.3 Determination of Cost Drivers
After the activity classification results are obtained according to their level, the next step is to
determine the cost driver of each activity requirement. In this case, the existing cost drivers are used as
the basis for applying activity costs to the product.

5.4 Determination of Homogeneous Cost Groups
The next step is to combine the activities and costs of each activity that have been classified into a
homogeneous cost group based on the similarity of activity levels and cost drivers owned by the
activity driver. So that from the identification and classification, there are 12 groups of costs
including:

1. Manpower of the executive
2. Indirect labor is part of the supervisor
3. Indirect labor is part of the manager
4. Material costs
5. Energy costs
6. Indirect field workers
7. Depreciation of production facilities

5.5 Determination of Cost Center Rates
After determining the grouping of activity drivers into several groups, the cost center rate for each
activity driver is then calculated. The cost center rate calculation is done by dividing the total cost of
each activity driver by the number of each cost trigger from the activity driver. So in this way, the cost
center rates are obtained which are shown in Table 2 below:

| Group                | Cost Type                      |
|----------------------|--------------------------------|
| Labor (Executor)     | Marketing                     |
|                      | Calculation                   |
|                      | Production and planning control|
|                      | Quality Control               |
|                      | OHS                            |
|                      | Engineering                   |
|                      | Procurement                   |
|                      | Warehouse                     |
|                      | Finance                       |
| Indirect Labor       | Marketing                     |
| (supervisor)         | Calculation                   |
|                      | Project Manager               |
|                      | Quality Control               |
|                      | OHS                            |
|                      | Engineering                   |
|                      | Procurement                   |
|                      | Purchase                      |
|                      | Finance                       |
| Indirect Labor       | Marketing                     |
| (manager)            | Calculation                   |
|                      | Production and planning control|
|                      | Quality Control               |
|                      | OHS                            |
|                      | Engineering                   |
|                      | Procurement                   |

| Group                | Cost Type                      |
|----------------------|--------------------------------|
|                       | Procurement                   |
|                       | Warehouse                     |
|                       | Finance                       |
| Material cost         | Telephone charges             |
|                       | Internet charges              |
|                       | Software license cost         |
|                       | Lorry fuels                   |
|                       | Forklift fuels                |
|                       | Water uses                    |
|                       | Marker uses                   |
| Energy cost           | Bending machine utilization   |
|                       | Boring machine utilization    |
|                       | Office electric utilization   |
|                       | Welding machine utilization   |
|                       | Small lathe machine utilization|
|                       | Big lathe machine utilization |
|                       | Hand grinding machine         |
|                       | Compressor utilization        |
|                       | Cutting machine utilization   |
| Group               | Cost Type                              |
|---------------------|----------------------------------------|
| Indirect field labor| Pipe Bending machine utilization       |
|                     | Crane utilization                      |
|                     | Waterpump floating dock utilization    |
|                     | Forklift operators                     |
|                     | Waterpump operators                    |
|                     | Crane operators                        |
|                     | Moving workers                         |
|                     | Dockmaster                              |
|                     | Security personnel                      |
|                     | Lorry driver                           |
|                     | Workshop checker                        |
|                     | Waterpump depreciation                 |
|                     | Lorry depreciation                      |
|                     | Pipe Bending machine depreciation       |
|                     | Boring machine depreciation             |
|                     | Welding machine depreciation            |
|                     | Small lathe machine depreciation        |
|                     | Big lathe machine depreciation          |
|                     | Hand grinding machine depreciation      |
|                     | Compressor depreciation                 |
|                     | Cutting machine depreciation            |
|                     | Pipe Bending machine maintenance        |
|                     | Floating dock maintenance               |
|                     | Crane maintenance                       |
|                     | Forklift maintenance                    |
|                     | Production Office hygiene               |
|                     | QC office hygiene                       |
|                     | Main office hygiene                     |
|                     | Piping workshop hygiene                 |
|                     | Outfitting workshop hygiene             |
|                     | Machinery workshop hygiene              |
|                     | Warehouse hygiene                       |
|                     | Production Office depreciation          |
|                     | QC office depreciation                  |
|                     | Main office depreciation                 |
|                     | Piping workshop depreciation            |
|                     | Outfitting workshop depreciation        |
|                     | Machinery workshop depreciation         |
|                     | Warehouse depreciation                  |
|                     | Computer maintenance                    |
|                     | Waterpump maintenance                   |

| Group               | Cost Type                              |
|---------------------|----------------------------------------|
| Facilities          | Lorry maintenance                      |
|                     | Bending machine maintenance            |
|                     | Boring machine maintenance             |
|                     | Welding machine maintenance             |
|                     | Small lathe machine maintenance        |
|                     | Big lathe machine maintenance          |
|                     | Hand grinding machine maintenance      |
|                     | Compressor maintenance                 |
|                     | Cutting machine maintenance            |
|                     | Pipe Bending machine maintenance       |
|                     | Floating dock maintenance              |
|                     | Crane maintenance                       |
|                     | Forklift maintenance                    |
|                     | Production Office hygiene               |
|                     | QC office hygiene                       |
|                     | Main office hygiene                     |
|                     | Piping workshop hygiene                 |
|                     | Outfitting workshop hygiene             |
|                     | Machinery workshop hygiene              |
|                     | Warehouse hygiene                       |
| Product Quality Development | Procurement of production training |
| Internal Management and Company Administration Support | President director |
|                          | Director of operations                 |
|                          | Director of finance and general         |
|                          | Internal control department unit of compliance supervisory |
|                          | Company Secretary department unit of administration, public relations, and quality control |
5.6 Calculation of Activity Costs
The calculation of activity costs is determined by multiplying the calculated cost center rate by the number of cost drivers needed for each activity driver in carrying out an activity. In this calculation, it will be known how the composition of costs between direct costs and indirect costs for each identified ship repair activity.

6 Analysis and Comparison

6.1 Analysis of Indirect Cost Calculation with Activity Based Costing Method
The calculation of the cost of ship repair work using the activity based costing method is different from the calculation of the existing conditions. The calculation of these two methods results in differences in the composition of direct and indirect costs. So that from the calculations carried out, the following results are obtained:

| Table 3. Direct Cost and Indirect Cost Composition |
|-----------------------------------------------|
| Direct Cost (IDR) | Indirect Cost (IDR) | Total Cost (IDR) |
| Ship 1            | 491,868,433         | 78,994,805       | 570,863,238     |
| Ship 2            | 335,244,114         | 57,890,169       | 392,638,283     |

In Table 3 above are the results of calculating direct and indirect costs using the activity based costing method for the same type of work. In performing calculations, the results of identification of activities that have been carried out are used as a reference in determining the needs and the amount of existing costs. So that from the results of these calculations, the cost composition will be obtained. If percentage, the composition of direct costs is 86% and indirect costs are 14%. The value of indirect costs has decreased significantly when compared to the existing conditions.

From these calculations, the results of the composition of direct and indirect costs for each activity are also obtained. So that if you summarize the activities that cause indirect costs during the ship repair process, including the repair list offer, calculation of work schedule planning, material and material ordering, material and material purchase budget planning, material and material delivery to shipyard, material quality checking, inventory control storage of raw materials, and distribution of materials to the workshop, conducting a survey of ship conditions, conducting arrival meetings, handling materials from warehouse to docking area, disposing of waste / waste repairs, conducting tests and clearance, making test and clearance reports, monitoring and recapitulating the use of people's hours, supervision of the implementation of K3L procedures, checking the quality of work results, checking the results of tests and work into classification, production staff allowances (overtime), skills training for production staff, making records of work realization or satisfaction notes, calculating recalculations, clarification and negotiation, invoice, as well as payment.
7 Comparison of Indirect Costs of Existing Conditions with Activity Based Costing Methods

Determination of indirect costs made by PT. XYZ in ship repair work has been using conventional methods, namely by taking a figure of 20% to 30% of the predetermined cost of production. Meanwhile, with the activity based costing method, determining indirect costs is based on activities and the use of resources in carrying out activities. Thus, the two different methods produce different indirect cost values.

| Table 4. Cost Distortion Between Existing Condition and ABC on Ship 1 |
| --- |
| | Ship 1 |  |
| Contract Value | 866.441.323 | 866.441.323 |
| Direct Cost | 472.890.279 | 491.868.433 |
| Indirect Cost | 141.867.084 | 78.994.805 |
| Management and administration | 53.125.000 | 53.125.000 |
| Income tax (PPh 23) | 17.328.826 | 17.328.826 |
| Difference in cost | 181.230.134 | 225.124.259 |

In Table 4, a comparison of direct costs, indirect costs, management and administration costs, income tax, and the difference between the total costs and the contract value is shown through the existing conditions calculation method and the ABC method on the ship case study 1. With a contract value of IDR 866,441,323, - in the calculation of the existing method, if converted into a percentage, the percentage of direct costs is 55%, indirect costs are 16%, management and administration costs are 6%, income tax is 2% and the difference between total costs and value contract by 21%.

In the calculation using the activity based costing method with the same contract value, the comparison of costs obtained if converted into a percentage is the percentage of direct costs of 57%, indirect costs of 9%, management and administration costs of 6%, income tax of 2%, and the difference between the total cost and the contract value of 26%. When comparing the value of the indirect costs of the two calculation methods, it can be seen that the value of indirect costs on Ship 1 which is calculated using the activity based costing method has decreased by 44% from the calculation of the existing conditions.

| Table 5. Cost Distortion Between Existing Condition and ABC on Ship 2 |
| --- |
| | Ship 2 |  |
| Contract Value | 580.991.360 | 580.991.360 |
| Direct Cost | 309.270.183 | 335.244.114 |
| Indirect Cost | 92.781.055 | 57.890.169 |
| Management and administration | 53.125.000 | 53.125.000 |
| Income tax (PPh 23) | 11.619.827 | 11.619.827 |
| Difference in cost | 114.195.296 | 123.112.250 |

In Table 5, a comparison of direct costs, indirect costs, management and administration costs, income tax, and the difference between the total costs and the contract value is shown through the existing conditions calculation method and the ABC method on the ship case study 2. With a contract value of IDR 580,991,360, - in the calculation of the existing method, if converted into a percentage, the percentage of direct costs is 53%, indirect costs are 16%, management and administration costs are 9%, income tax is 2% and the difference between total costs and value contract by 20%.

In the calculation using the activity based costing method with the same contract value, the comparison of costs obtained if converted into a percentage is the percentage of direct costs of 58%,
indirect costs of 10%, management and administration costs of 9%, income tax of 2%, and the difference between the total cost and the contract value of 21%. When comparing the value of the indirect costs of the two calculation methods, it can be seen that the value of indirect costs on Ship 2 which is calculated by the activity based costing method has decreased by 38% from the calculation of the existing conditions.

In calculating the cost of the two ships using the existing method and the activity based costing method, there are differences in the cost determination mechanism. In the calculation of the existing conditions, the direct cost components are material and labor costs directly involved in ship repair work and the indirect costs include supporting costs for repair activities as well as costs for management and administration. Whereas in the calculation using the activity based costing method, the value of direct and indirect costs is calculated based on the business processes that occur during the repair process, both supporting and direct, so this makes a difference in determining costs that were initially classified as indirect costs. direct cost. As in charging fees for marketing implementers whose value can be charged to the project, this is because the marketing department executor carries out work to find tenders, so that if a repair tender is obtained, the ship repair process can be carried out and vice versa if the tender process is not carried out then the ship repair process is also will not be able to walk.

From the results of calculations according to the activity based costing method, indirect cost components are obtained such as indirect material costs, indirect production and non-production labor costs, maintenance and depreciation costs, management and administration costs and income tax. The management and administrative activities of the company are classified as indirect cost components and are posted as another form of cost. In addition, taxes are classified as indirect costs because taxes are a cost component that must be incurred by the company as a result of ongoing business processes. This is because taxes are a component of production costs that must be paid by companies but are not classified as direct material costs or direct labor, therefore tax is one of the indirect components of production costs. Thus, the only tax calculated in this study is the PPh 23 income tax whose value is calculated at 2% of the contract value. As for the income tax PPh 21 the value is not calculated. This is because the value for PPh 21 is included in the employee salary that has been paid by the company. So that from the salary paid, the company can immediately deduct it to be paid by taxpayers.

In Figure 1 it can be seen that by using the activity based costing method, the percentage of direct and indirect cost components is obtained. The cost composition in the diagram is the average composition
obtained from the 2 ships as the case. The total percentage of direct costs is 76% with cost components in the form of direct material costs of 51%, direct production labor costs of 14%, direct non-production labor costs of 2% and costs of using machines / equipment by 9%. Meanwhile, indirect costs have a total percentage of 24% with cost components in the form of material indirect costs of 1%, indirect production labor costs of 2%, indirect non-production labor costs of 1%, indirect management costs and 10% administration fee, 3% indirect income tax expense, 1% facility maintenance fee, and 6% facility depreciation fee.

8 Conclusions
Conclusion: Based on the results of the research that has been done, it can be concluded that:
1. In determining the indirect costs of ship repair work, PT. XYZ uses a conventional method, namely by taking a value of 20-30% of the cost of production of a predetermined ship repair work. So that from the data that has been obtained and calculated, the results show that the value of the indirect costs for repair work on Ship 1 is IDR 141,867,084, - and on Ship 2 of IDR 92,781,055, -.
2. Through identification that has been carried out based on the activity based costing method, activities in the ship repair process are obtained that affect indirect costs including repair list offers, Kalbea calculations, work schedule planning, material and material ordering, material purchase budget planning, delivery of materials to the shipyard, checking the quality of materials, controlling the inventory for storing raw materials, and distributing materials to the workshop, carrying out a survey on the condition of the ship, conducting the arrival meeting, handling material from the warehouse to the docking area, disposing of waste / waste repairs, conducting tests and clearance, manufacturing test and clearance reports, supervision and recapitulation of the use of human hours, supervision of the implementation of K3L procedures, checking the quality of work results, checking test and job results into classification, skills training for production staff, making records of job realization or satisfaction notes, calculations n recalculation, clarification and negotiation, invoicing, payments, and management and administration activities of the company.
3. The formulation of indirect costs has a total percentage of 24% of production costs with cost components in the form of indirect material costs of 1%, indirect labor costs of production of 2%, indirect non-production labor costs of 1%, costs indirect management and administration costs of 10%, indirect income tax costs of 3%, facility maintenance costs of 1%, and facility depreciation costs of 6%. So that by using the activity based costing method, the value of the indirect cost on ship 1 is IDR 78,994,805, - and on ship 2 of IDR 57,890,169, -.

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