



# Use of the 'Ship Calculator' Application as a Learning Media to Help Accuracy and Speed in Calculating Ship Operational Costs

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## Abstract

Study This aim For The aim of writing a research proposal is to produce a product in the form of an application that can manage ship operational cost data according to Ministerial Regulation Number 66 of 2019 and to produce a product in the form of an application that can provide printed results in the order in the attachment to Ministerial Regulation Number 66 of 2019. Development or design model Research is the basis for developing the products that will be produced. The techniques used to collect data in this research were interviews and observation. The product resulting from this research and development is software in the form of an application for desktop devices with the Spreadsheet platform. Test result The application can manage ship operational cost data according to Ministerial Regulation Number 66 of 2019 and The application can provide printed results in the order in attachment Ministerial Regulation Number 66 of 2019.

**Keywords:** ship operational cost, application, ministerial regulation

## 1 Introduction

The Minister of Transportation of the Republic of Indonesia has issued Minister of Transportation Regulation Number 66 of 2019 concerning Mechanisms for Determining and Formulating Ferry Transport Tariff Calculations. This regulation also includes details of calculating ship operational costs.

In the learning process, manual methods are still used to calculate ship operational costs. The data is entered one by one, then calculated using the formula according to Minister Regulation number 66 of 2019, by looking at the formula, then the calculation results are obtained. Using this manual method, it will take a lot of time to calculate the components one by one and there is still the possibility of calculation errors.

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For this reason, a model or learning media is needed to help with accuracy and speed in calculating ship operational costs.

The ability to calculate ship operational costs accurately and quickly is very necessary for cadets in the learning process. The accuracy and speed of calculating ship operational costs can help cadets save time and provide more time to analyze the results of these calculations.

The formulation of the problem occurs because the Palembang River, Lake and Ferry Transport Polytechnic does not yet have an application that can manage data about vehicle operating costs automatically. The formulation of the problem in this research is:

1. What application can manage ship operational cost data according to Minister Regulation Number 66 of 2019?
2. What application can provide printed results in the order in attachment to Minister Regulation Number 66 of 2019?

In accordance with the problem formulation that has been explained, there are objectives for writing a research proposal, namely:

1. Produce a product in the form of an application that can manage ship operational cost data according to Minister Regulation Number 66 of 2019.
2. Produce products in the form of applications that can provide printed results according to the order in attachment Minister Regulation Number 66 of 2019.

Based on the background and identification of the problems described, the limitations of this research problem focus on creating a desktop application based on Spreadsheet to support learning

## 2. Theoretical Foundations

2.1. Regulation of the Minister of Transportation of the Republic of Indonesia Number Minister Regulation 66 of 2019 concerning Mechanisms for Determining and Formulating Ferry Transport Tariff Calculations

### CHAPTER V TARIFF CALCULATION FORMULA Article 14

- (1) The Basic Tariff for Ferry Transport is the total basic cost divided by production within a period of 1 (one) year.
- (2) The basic costs as intended in paragraph (1) consist of the following components:
  - a. direct cost; And
  - b. indirect costs.
- (3) The calculation of basic costs as intended in paragraph (1) is listed in Appendix II which is an inseparable part of this Ministerial Regulation.

## 2.2. Instructional Media

According to Sejati and Koeswanti (2020), learning media is anything that can help channel information from several learning sources so that a conducive learning environment occurs and an effective and efficient learning process arises.

According to Suarya and Yusa (2017), desktop-based Interactive Multimedia is one solution that can be realized. This media can include delivering messages in interactive audio-visual form so that information can be conveyed directly to respondents with more complete and concise information content.

According to Wibowo (2016), learning media is anything that can be used in the teaching and learning process to convey messages (teaching materials) better and more perfectly so that they can stimulate students' attention, interest, thoughts and feelings by using zooming presentation learning *media* in learning activities to achieve learning goals

According to Nasser (2022), learning media are tools that can help the teaching and learning process so that the meaning of the message conveyed becomes clearer and educational or learning goals can be achieved effectively and efficiently.

## 3. Research Model

The system development model that will later be developed has five stages. Literature and interview methods as media to collect some of the data needed to create an application.

### 1. Literature and Interviews (Data collection)

Data collection for materials for making this system was carried out using literature and interviews

### 2. Analysis

After conducting interviews, researchers began to analyze the needs of the cadets. The stages start from designing the design for input and output. Researchers also held discussions to find more in-depth information needed.

### 3. Application Design

If the analysis has been carried out, the researcher starts at the system design stage by designing the menu and determining input and output such as writing form and color in designing a desktop-based *system*.

### 4. Implementation

The implementation stage involves entering data to check that *the output* displayed by the application is correct as planned.

### 5. Application Testing

If the implementation stage has been carried out, testing is carried out. This is to determine the suitability of the program appearance and design for the appropriate system and case. The success rate of testing the design is carried out by looking at the extent to which the user understands how to use the application.

## 4. DISCUSSION

### METHOD

The development of this application using Spreadsheet applies the following steps.

#### 4.1. System analysis

Data collection on ship operational cost components was carried out manually by copying the Minister Regulation 66 of 2019 attachment in Spreadsheet. The data needed for calculations are direct costs and indirect costs. This data will later be used for input during the process of filling in sheet 1, namely the Survey Form.

#### 4.2. System planning

This application was created using Spreadsheet. The application chosen was Spreadsheet, because Spreadsheet was considered familiar for cadets to use.

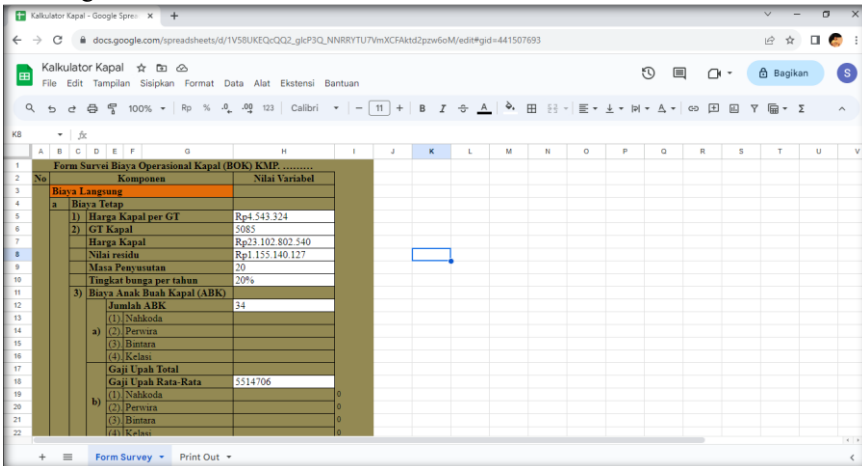
The application is in the form of spreadsheet data in Spreadsheet that is easy to edit for learning purposes. The database consists of two sheets, namely the Survey Form sheet and the Print Out sheet.

1. The Survey Form Sheet contains the data needed to calculate Ship Operational Costs according to Minister Regulation number 66 of 2019.
2. The Print Out Sheet contains formulas that are connected to the Survey Form sheet to produce a display like in attachment Minister Regulation number 66 of 2019.

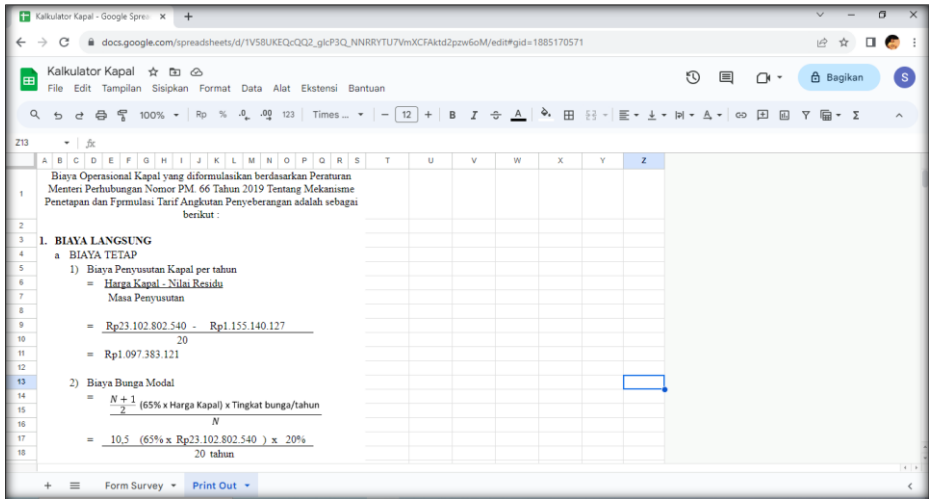
The data obtained from the survey results is input on the Survey Form sheet, it will be automatically calculated by the system, then the calculation results will appear on the Print Out sheet. This is to make it easier for users not to carry out calculations again, because all calculations in attachment Minister Regulation number 66 of 2019 have been automatically filled in.

#### 4.3. Display Design

Display design activities are carried out to make it easier for users to enter survey result data. All cost components are made sequentially according to attachment Minister Regulation number 66 of 2019.



Display on the Print Out Sheet



4.4. Application Testing

After creating the system, testing was carried out in using this application. The advantage of this application is that it is easy to obtain print out results because the user only transfers the survey data to the Survey Form sheet without doing many formula calculations because it is automatically filled in.

4.5. Application Testing Results

Application Testing Results Table

| No. | Objective  | Scenario   | Test result  |
|-----|--|--|--|
| 1   | Producing a product in the form of an application that can manage ship operational cost data according to Minister Regulation Number 66 of 2019          | Enter data according to the Survey Form completely and correctly | The application can manage ship operational cost data according to Minister Regulation Number 66 of 2019     |
| 2   | Produce products in the form of applications that can provide printed results according to the order in attachment Minister Regulation Number 66 of 2019 | Enter data according to the Survey Form completely and correctly | The application can provide printed results in the order in attachment Minister Regulation Number 66 of 2019 |

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