Design of Ship Repair Yard Ranking Website Based on Customer Reviews

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Abstract. Many ship owners currently choose ship repair yards based on conventional ways; there is no specific platform that can provide information objectively ranking the ship repair yards that can be accessed in public. On the other hand, technological developments have shifted in community business activities from an offline way to the online method. The initial process of designing the application is by determining and weighing the criteria for assessing ship repair shipyards using the AHP method and then obtained nine criteria with weights for each standard. After getting the requirements and value, then we make a website-based application design. This application will display shipyard ranking according to the ratings and reviews provided by customers. The calculation of each shipyard's rating and scale will be determined based on the per-criteria value, which is then accumulated based on the weight of each predetermined criterion. After testing the application in a questionnaire on several respondents from shipping companies, this application gets a value of 28.5 out of 30, or 94.9%, which means this application necessary to be applied in the ranking of ship repair yard.

Keywords: Ship Repair, Yard Ranking, Customer Reviews.

1. Introduction
The absence of a ship repair yard ranking system will make it difficult for the ship owner to choose and assess a shipyard. Currently, many owners choose a shipyard based on conventional ways, such as internal selection by each company or using the services of a third party to help evaluate and select a shipyard based on the criteria of each company. Some shipping companies do not perform the shipyard selection process because the company already has a private shipyard or has trusted one shipyard, so it uses a subscription system. From the shipyard selection system above, it appears that there is no particular container that holds all the shipyard assessments objectively that are based on the Owner's point of view.

On the other hand, the rapid development of technology has made the shift in business activities of people around the World from offline way to online, one of which is characterized by the growth of e-commerce, which is very significant from many industry sectors in Indonesia. It will also affect the shipping sector in Indonesia. With the amount of activity in the shipyard in Indonesia, indeed it takes a system/indicator used by the Owner as a reference to choose the right shipyard.

Among the many features of e-commerce, Online Customer review (OCR) can also be referred to as electronic Word of Mouth (eWOM)[1]. in the form of reviews from customers given after customers purchase or use products services. This customer review also provides one of the features that have attracted much attention from academics and society as one of the most influential factors in determining consumers' purchasing decisions[2]. User-generated review content is then posted on the online site of a service provider or third-party web website. Also, customer reviews are considered one...
of the most critical factors in influencing customer trust and interest[3]. Therefore, this system can be applied to the shipping industry also.

2. Literature Study

2.1. Shipyard

The shipyard is a means of constructing or assembling and repairing vessels located by the sea or water. The shipyard is generally located on the seashore and has a functioning platform to launch the ship after completion[4]. The shipyard is also an industry-oriented to produce products in ships, offshore buildings, floating buildings, and others. Most of the shipyard production is based on the specifications and requests of the customer (Owner)[5]. In contrast, the ship is a complex floating structure composed of various constituent components. Vessels can be classified by the primary size, carrying capacity, or the use of the voyage[6].

Shipyards, especially in Indonesia, can be divided into three types[7], namely:

- Building Dock Shipyard, the shipyard that only constructs a new ship.
- Repair Dock Shipyard, which is a shipyard that only performs repair and maintenance of the vessel.
- Building and Repair shipyard, a shipyard that performs the construction of new ships, repairs, and maintenance of vessels.

The shipyard, which is reviewed in this research, is the shipyard that performs the ship repair work, namely Repair Dock Shipyard and Building and Repair shipyard.

2.2. Ship Repair

The ship repair process is a process of repairing or replacing part of the vessel that has not fulfilled the standard of sailing eligibility based on the rules and statutory. reparations on ships generally involve three factors[4], namely:

- Hull and Construction
  Reparation on the ship's body regarding repair and replacement of the plate and profile construction of the vessel body.
- Machinery
  Reparation on machinery parts regarding repair and replacement of machinery parts, piping system, electricity, and ship propulsion system.
- Outfitting
  Reparation in this section concerning repair and replacement of outfitting and hull equipment.

2.3. Customer

The customer is the ultimate destination of the product issued by a company[2]. Referral includes a customer perspective to measure the company's performance in addition to traditional measurements based on the health of the company's financial statements[8]. Company’s performance can be reviewed through four perspectives: Financial Perspective, Customer perspective, an internal business perspective, and learning and growth perspective. So, customers are an essential perspective, and the corporation should always strive to satisfy customers[9]. In this study, the customer referred to is the ship owner/shipping company.

The ship owner is the Owner of a merchant ship or commercial vessel involved in the shipping industry[10]. Ship-owners are usually organized in companies (Shipping Line/company), but individuals and investment funds can also own a ship.

2.4. Customer Review and Rating

The Reviews are part of the Electronic Word of Mouth (eWOM), a direct opinion of a person and not an advertisement. Reviews are one of several factors that determine a person's buying decision[1], indicating that people can take several reviews as an indicator of product popularity or value of a product that will affect the willingness to purchase a product. However, not necessarily the more
reviews and ratings mean the product will be purchased by the customer. Many factors are the reason for the decision to purchase a product for the customer. Ratings are part of a review that uses shapes such as star symbols, thumbs, or numbers rather than text in expressing opinions from customers. Ratings can be interpreted as a user's assessment of a product's preference for their experience, referring to the psychological and emotional state they are living in when interacting with virtual products in mediated environments[11].

2.5. Computer Application
The computer application or software is a collection of electronic data that is stored and regulated by the computer[12]. The electronic data that it contains can be a program or instruction to execute a command. The software serves as a means of interaction between the User and the hardware.

2.6. Website
The Website is an internet facility that connects documents in both local and remote scope. The documents on the Website are called Web pages, while the link in the Website allows users to move from one page to another page, both between the page being stored on the same server or the server around the World[13]. Pages are accessed and read via browsers such as Netscape Safari, Internet Explorer, Mozilla Firefox, Google Chrome, and other browser applications. Whereas according to the reference, the Website is a collection of related web pages and the files – The files are interconnected. The web consists of the page a page or page and a set of pages named Homepage. The Homepage is in the top position with the linked page underneath. The page under the Homepage is called a child page that contains hyperlinks to other pages within the web.

2.7. Database System
The Database is a logically linked collection of computer data that contains a description of the data and is designed to meet the information needs. Databases are also a large data storage space and can be used by multiple users simultaneously[14]. Also, the Database has many sizes and varying degrees of complexity. Systems are a collection of elements that interact to achieve a defined goal. The system consists of interconnected parts by accepting inputs and generating outputs in an organized transformation process. [15]

2.8. Analytic Hierarchy Process (AHP)
The Analytic Hierarchy Process (AHP) is a method that can be used in decision making or order priorities from various alternatives to complex problems using multi-level hierarchical structures of objectives, criteria, sub-criteria, and alternative decisions[16]. Essentially, AHP is a method that breaks down a complex and unstructured problem into groups, organizes those groups into a hierarchy, inserts numeric values in place of human perception in relative comparison, and finally, with syntheses, determined which element has the highest priority. AHP provides weights on each factor, variable, and indicator with comparisons between factors, variables, and indicators of each other. The more excellent value of an indicator indicates that the indicator is more important than the other indicators.[17]

3. Methodology
In general, the method of this research can be seen as follows:

- Identification of Problems
  The initial stage of the study is identification problems, where researchers begin to conduct observations to identify and determine the background, formulation, purpose, and problem limitations of the current shipyard rating system.

- Literature Review
At this stage, studies are conducted on literature such as journals, books, articles, or previous research-related and may support this research. Literature studies include:

- Shipyard assessment criteria.
- Customer reviews and ratings.
- Website-based computer applications.

**Field Study**

At this stage, field studies are conducted to obtain supporting data related to the research. Required data includes:

- The condition of the existing ship repair shipyard rating.
- Shipyard assessment criteria.

**Data Collection**

After the study of literature and field, the following data can be collected:

- Shipyard assessment criteria.
- Points of consideration of each existing criterion.
- Shipyard in East Java.

**Data Processing**

Once the required data is obtained, the subsequent data processing is done:

- Evaluate the previous criteria so that new criteria are determined based on existing conditions.
- Weight the importance level of the newly defined criteria.

**Application Design**

After data processing, the application design is done with the following stages:

- Design a customer review-based shipyard rating system.
- Creation of app Mock-Ups.
- Design the ERD, DFD, and Database from the application.
- Design and implementation of the system.

**Testing and Analysis**

At this stage, testing, verification, and analysis of designed applications are performed. Application testing is carried out with the relevant party, namely the Owner of the ship or Shipping Line.

**Conclusions and Recommendation**

This stage is the last stage of this research, which is to make conclusions and recommendations. The conclusions obtained from this study should answer the purpose of this study. The recommendation given is used for subsequent research purposes that are related to this research topic.

4. **Existing Condition**

4.1. **Condition of Ship Repair Yard Ranking**

Based on the results of the literature study and field study on ship repair shipyard, it is obtained that there is currently no shipyard rating system for the shipyard and new buildings that can represent the assessment from the point of view of the Owner or Owner. World statistics sites such as statista.com to make a rating on the shipyard based on the amount of tax on the company's profits or can be called the Capital Gain Tax (CGT), production of tonnage, and the number of orders year from the shipyard[18]. Due platform to the absence of a platform that facilitates the Owner or the shipping company on the ship Repair shipyard based on customer reviews, then the current selection process is still done in a conventional way by each company.

4.2. **Condition of Ship Repair Yard Selection**
The shipyard selection process is usually done independently by divisions related to Fleet maintenance such as docking, procurement, or other divisions that in some shipping companies have different division names. Another way to make a shipyard selection is to find a proven independent scheme such as the Product Quality Assessment Manufacturer or MPQA, which is usually provided by the world classification agencies. MPQA can provide an overview of the quality and capabilities of a shipyard. In addition, shipping companies can also use the services of third parties to help evaluate and select a shipyard.

On the other hand, some shipping companies do not perform the shipyard selection process because the shipping company already has a private shipyard so that when it will do the repair work, the company's ship will be directly docking on its private shipyard. There are also several shipping companies that already trust a particular shipyard, which then performs the "subscription" system at the shipyard. So every time the ship will repair, the shipping company will use the service of his shipyard. Furthermore, for other shipping companies that do not have a private shipyard or a subscription, it is required to perform a shipyard selection each time the company's fleet is about to repair. This election was done in various internal considerations from each company, and there were individual criteria when choosing a shipyard to repair the ship.

5. Application Design

Based on the study and analysis that has been done in the previous chapter, this chapter will be explained from the design and operation of new systems in the form of Website-based applications that can be used to facilitate the process of ship repair shipyard based on customer reviews.

5.1. Ranking System Design

5.1.1. Criteria Identification

The first step in the design of the shipyard review and assessment system is to identify the purpose of the shipyard rating as desired by the shipping company. This identification is used to find out what criteria need to be included in the shipyard rating and review process. Based on the evaluation of the criteria of ship repair shipyard, identification is carried out, as seen in Table 1.

| No | Criteria                  | Description                                                                 |
|----|---------------------------|-----------------------------------------------------------------------------|
| 1  | Repair Quality           | Quality of reparation work in accordance with existing regulations and standards |
| 2  | Repair Facilities        | Conditions and completeness of supporting facilities of repair work in a shipyard |
| 3  | Repair Cost              | Fees and payment systems offered by the shipyard                             |
| 4  | Shipyard Experience      | A shipyard experience handles similar reparation jobs                        |
| 5  | Shipyard Location        | The strategic location of the shipyard                                       |
| 6  | Repair Time              | Accuracy and availability of docking/repair time                             |
| 7  | Shipyard Labour          | Availability and skills of shipyard Labor                                   |
| 8  | Shipyard Service         | Services and facilities provided by the shipyard to the Owner                |
| 9  | Shipyard Management      | The managerial ability of a shipyard                                         |

5.1.2. Criteria Verification
After conducting the identification process of the ship repair shipyard selection, which includes nine criteria, then verification of the criteria of selection of shipbuilding repairs, this verification process aims to determine whether the criteria can be applied, measured, and represents the current shipyard selection conditions by conducting interviews with some expert respondents on this topic so that the points can be considered as points of consideration of each criterion as shown in Table 2 below.

| No | Criteria                  | Points of Consideration                                      |
|----|---------------------------|--------------------------------------------------------------|
| 1  | Repair Quality            | • Quality according to classification regulations            |
|    |                           | • Repair work according to specification and request of Owner |
|    |                           | • No rejected and re-work on repair work                     |
|    |                           | • The vessel can function appropriately after repair         |
| 2  | Repair Facilities         | • Large docking area                                        |
|    |                           | • Crane capacity is adequate                                 |
|    |                           | • Adequate workshop facilities                               |
|    |                           | • Facilities conform to K3 standard                          |
| 3  | Repair cost               | • Inexpensive repair Cost                                   |
|    |                           | • The cost of repairs is easy to negotiate                   |
|    |                           | • The terms system facilitates the Owner                     |
|    |                           | • Shipyard includes tax and NPWP                            |
|    |                           | • Invoices with exact reparations and details                |
| 4  | Shipyard Experience       | • Experienced in specialized mechanical work                |
|    |                           | • Experienced in similar ship repair work                    |
|    |                           | • Have a good track record of shipyard service              |
|    |                           | • Have a good track record at the time of repair             |
|    |                           | • Have a good track record on the quality of repairs        |
|    |                           | • Have a good track record of shipyard facilities           |
|    |                           | • Have a good track record of the location of the shipyard  |
|    |                           | • Have a good track record on the shipyard workforce        |
| 5  | Shipyard Location         | • Dockyard location close to fleet Cruise route              |
|    |                           | • The water depth around the shipyard is sufficient          |
|    |                           | • Easy access to Shipyard                                    |
| 6  | Repair Time               | • Fast docking/undocking time                               |
|    |                           | • Quick Repair Job                                          |
|    |                           | • Timely repair work                                        |
|    |                           | • Keep working on holidays                                  |
| 7  | Shipyard Labor            | • Experienced labour                                        |
|    |                           | • Friendly labour                                           |
|    |                           | • Skilled labour                                            |
|    |                           | • Enough labour                                             |
| 8  | Shipyard Service          | • Response to complaints                                   |
|    |                           | • There is an office for the Owner                          |
|    |                           | • There is the consumption for the Owner,                   |
|    |                           | • Security and Safety Assurance                             |
|    |                           | • There are utilities for ABK                                |
|    |                           | • Clean and Neat shipyard Area                              |
| No | Criteria                | Points of Consideration                                                                 |
|----|-------------------------|-----------------------------------------------------------------------------------------|
| 9  | Shipyard Management     | - Clear Shipyard Organizational structure                                               |
|    |                         | - There is an information system that facilitates transactions                          |
|    |                         | - Good communication from the shipyard                                                 |
|    |                         | - The job desk and workflow on the repair project are clear.                         |

5.1.3. Criteria Weighting

The weighting process is carried out to determine the level of exposure of each previously verified ship repair shipyard criteria. Weighting is carried out using Analytic Hierarchy Process or AHP method by submitting expert judgment questionnaires in the form of pairwise comparison to some respondents who are considered experts and experienced in the process of selection of ship repair yard. Based on the results of the AHP questionnaire survey with respondents who have been considered experts from 3 shipping companies, the recapitulation of the criteria weighting questionnaire, as seen in Table 3.

**Table 3. AHP Questionnaire Recap.**

| Criteria | QL | FC | CS | EX | LC | TM | MP | SR | MN |
|----------|----|----|----|----|----|----|----|----|----|
| QL       | 1,44 | 1,7 | 1,44 | 1,81 | 1 | 2 | 2,28 | 2,15 |
| FC       | 1,18 | 1,14 | 1,31 | 1,44 | 1,25 | 1,58 | 2,15 |
| CS       | 1,65 | 1,1 | 2 | 1,44 | 1,18 | |
| EX       | 1,58 | 1,25 | |
| LC       | 1 | 1,14 | 1,25 | 1,18 |
| TM       | 1,44 | 1,25 | 2,51 |
| MP       | 1,25 | 2,08 |
| SR       | 1,1 | |
| MN       | Incon: 0,02 | |

*Table Captions:
QL: Repair Quality
FC: Repair Facilities
CS: Repair Cost
EX: Shipyard Experience
LC: Shipyard Location
TM: Repair Time
SR: Shipyard Service
MN: Shipyard Management
IV: Inconsistency Value

After entering and processing the data using decision-making software, it is obtained the weight of the importance level of each criterion, as seen Table 4.
Table 4: Weight Criteria Recap.

| No | Criteria            | Weight | %  |
|----|---------------------|--------|----|
| 1  | Repair Quality      | 0,167  | 16.7 |
| 2  | Repair Facilities   | 0,147  | 14.7 |
| 3  | Repair Cost         | 0,125  | 12.5 |
| 4  | Shipyard Experience | 0,121  | 12.1 |
| 5  | Shipyard Location   | 0,112  | 11.2 |
| 6  | Repair Time         | 0,104  | 10.4 |
| 7  | Shipyard Labor      | 0,088  | 8.8 |
| 8  | Shipyard Service    | 0,076  | 7.6 |
| 9  | Shipyard Management | 0,061  | 6.1 |
|    | **TOTAL**           | 1      | 100 |

The review and assessment system used for the rating of shipyard reparations will be carried out by providing reviews and values on each criterion. The overall value of a shipyard will be obtained by averaging all values on each criterion. Then the average score of each of these criteria is multiplied by the weight of the per-criteria assessment. The result of the value of each criterion that has been multiplied by each weight is then summed and obtained the final value of a shipyard.

5.2. Application Design

5.2.1. Basic Design Framework

The first step in designing an app is to create a basic framework or design of the application system. This basic framework is needed to make it easier for programmers and users of the application to understand the intent and purpose that the author wants to convey, as seen in Figure 1:

![Application Basic Framework](image)

Figure 1. Application Basic Framework.

Description:
- In-process A is done the approval process/rejection of reviews, shipyard accounts, and reports from User by Admin.
- In the process, B obtained output in the form of rating information and shipyard reviews that have been approved by the Admin.
- In process C, user data input is done in the form of reviews, additions to shipyard accounts, and reports.
- In process D, data input by User in process C is sent to the Admin for approval/rejection.
5.2.2. **Entity Relationship Diagram (ERD)**

Entity Relationship Diagram, or it can be called ERD, is a database designing method database that illustrates relationships between existing entities. Relationships used later can be for the effectiveness of the database system or other system development.

5.2.3. **Data Flow Diagram (DFD)**

Data Flow diagrams or DFD are the forms of data migrations from one process to another. DFD is also a graphical representation representing a system. DFD serves to describe the components of a system, the flow of data between components, the origin, the purpose, and the storage space of that data. The DFD of the application to be designed can be overhead in the following Figure 2:

![Data Flow Diagram (DFD)](image)

**Figure 2.** Data Flow Diagram (DFD).

5.2.4. **Database Design**

Based on the system that has been designed, the database design is done. In the database design database, programmers use phpMyAdmin Application with a hosting server using CPanel application.

5.3. **System Design and Implementation**

The application was designed named Galangin. Galangin can be described as the first platform in the World that provides information on shipyard-based ship repair and pen ratings from customers, which in the research is still being developed Limited to several shipyards in East Java alone. The presence of Galangin is expected to facilitate the ship owner or shipping company in finding and viewing the reviews and ratings of a shipyard based on the most frequently used criteria to assess a ship repair shipyard. Galangin can be used for free and is accessible at any time using an Internet connection. In addition, Galangin also has a verification system to filter incoming reviews, so there will be no review counterfeiting by irresponsible parties. Therefore, Galangin can be a solution in the selection and removal of shipbuilding repairs.

Galangin application can be accessed by using a Web browser such as Google Chrome or Mozilla Firefox by entering the URL https://galang.in. As for the display of the ship's shipyard rating application based on customer reviews are as follows.

5.3.1. **Welcome Page**

The Welcome Page is the first page that visitors will find when accessing Galangin's Website. As seen in Figure 3, this page serves as a portal to access the Website, where visitors must Log In for those who already have an account and sign up for those who do not already have an account to register as a user.

5.3.2. **Main Page**

The main page for the User will display a list and rank from the shipyard, as shown in Figure 4. The main page for the User also has a menu for writing a review called Add a Review. Different from the User, the main page for admins only has a menu to approve the registered shipyard account and accounts, namely the Review control, Shipyard control, and Report control pages.
5.3.3. Shipyard Profile Page
The Shipyard profile page is a page that contains information about a shipyard. Such information includes name, address, logo, contact, description, review per-criterion review, and rating of a shipyard, as shown in Figure 5.

Figure 3. Welcome Page.

Figure 4. Main Page for User.

Figure 5. (a) Shipyard profile page and (b) Review display.
5.3.4. "Add a Review" Page
The Add a Review page serves to add or give a review to a shipyard. The display on the Add a Review page can be viewed in Figure 6. The reviewer and the rating are done in each criterion, and the value will be processed based on the weight of each criterion.

![Add a Review Page](image)

**Figure 6. Add a Review Page.**

Data that must be input by User when creating a review, among others, shipyard name, vessel name, vessel type, repair type, date of repair, and review and the value of each predefined criterion. In addition, the User must also upload a verification file to indicate that the correct repair work is happening and can be held accountable. After uploading the verification file, the User can press the Add a Review button and wait for the reply to be approved by Admin before it can be displayed on the shipyard profile.

5.3.5. "Create Shipyard Account" Page
Besides adding reviews to a shipyard, users can also create a shipyard account. This feature can be run on the Create Shipyard Account menu located on the username handle of each User. When creating a shipyard account, the User must enter data such as username, name, email, description, address, city, country, phone number, and password for his account, as in Figure 7.

![Create a Shipyard Account Page](image)

**Figure 7. Create a Shipyard Account Page.**

6. Analysis and Discussion

6.1. Validation Test
Data in the form of reviews provided by reviewers from cruise companies will be stored on to the server galang.in after the review process is done. Furthermore, the data that can only be accessed by
the Admin will be verified the credibility of the review based on the reviewer's profile and the verification document that is the original proof that the company is repairing the ship at the relevant shipyard. Before it is approved by the Admin, the shipyard will also get a notification confirming that the review is indeed from the ship owner that repaired the ship. The shipyard will be given the option to acknowledge the correct or incorrect data of the ship, and then the shipyard recognition input will be sent to the Admin for verification. Reviews that pass the verification process will be submitted to the page and can be viewed in general by all Users on the web "Home" page, while reviews that do not pass the verification process will not be submitted to the User and will remain on the server.

The data of the value or rating per-entry criteria will be calculated automatically by the server based on the weight per-criterion that has been specified by averaging the entire value per-criterion, then the average value per-criterion multiplied by the weight-per-criterion. All average values per criterion that have been multiplied by weights are then summed with the values of other criteria so that the final value is obtained from a shipyard. Review data verified by the Admin will be submitted and accessible online by all Users on the galang.in.

6.2. Application Verification

To analyze the feasibility of the program, the testing and verification of the application with the relevant party is the Owner of the ship. The Owner who helped with this verification process has been competent to assess a shipyard as well as play a role as one of the User on this Website. After testing the app, an interview was then conducted about feedback about the designed app. The interview process is equipped with a questionnaire where this questionnaire contains six questions that aim to know the responses of the parties related to the application of this website program.

| R | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | TOTAL | Mean | % |
|---|----|----|----|----|----|----|-------|------|---|
| 1 | 5  | 5  | 4  | 5  | 5  | 5  | 29    | 4.83 | 96.6 |
| 2 | 5  | 5  | 4  | 5  | 4  | 4  | 28    | 4.66 | 93.2 |
| Mean | 28.5 | 4.745 | 94.9 |

*note:
R = Respondent
Q = Question

From the results of the questionnaire as seen Table 5, it is obtained that the application gets a value of 28.5 out of 30, or 94.9%, which means the application can be said to be "mandatory" or indispensable to be applied in the rating of the ship repair shipyard.

6.3. Advantages and disadvantages

After testing the application, the advantages and disadvantages of the system that have been made are obtained.

6.3.1. Advantages

The advantages of a customer review-based shipyard repair rating application that have been designed are:

1. The system can be accessed anywhere and anytime online because of the website-based system.
2. The review and rating system is made based on the shipyard repair criteria used by the Owner, so that the system is oriented towards the Owner in the operation of the application.
3. The shipyard value generated in the application is calculated on a per-criterion basis, so that it has different criteria for importance.

4. The ratings, reviews, and values of the shipyard generated in this application can be used as a medium for evaluation and appreciation for the shipyard, so that the shipyard can improve its service or make its value and reviews as a marketing or promotional media for the shipyard.

5. The appearance of the application is inspired by e-commerce applications that are widely used in the world, so that the application is easily understood by many people.

6. The application has a verification system to filter incoming reviews and shipyard accounts, so that irresponsible parties will not falsify reviews and shipyard accounts.

6.3.2. Disadvantages
In addition to the advantages offered, this customer review-based shipyard repair rating application also has the disadvantages of the system that has been designed:

1. Internet access is required to use the application because it is a website-based application.
2. Because it is online, there is a possibility that the application could be attacked by viruses or hackers.
3. The application has not been able to perform verification automatically so it still has to rely on the admin in the verification process.
4. The application has not been able to carry out business activities and is only limited to the review and rating process of the shipyard.
5. Participation from the repair shipyard is still not involved in this research and is only oriented to the point of view of the owner or shipping company.
6. There are still some bugs on the website that was designed, so that the operation of the website is still not optimal

From the above weaknesses, it is hoped that it can become an evaluation in application development at the next stage or research, so that it can become a better application.

7. Conclusion
After the design of computer applications for the rating of ship repair yard based on customer reviews are done, the following conclusions are obtained: There is currently no ship repair yard rating system that can represent the point of view of the Ship Owner. The process of selection of shipyards is still done in a conventional way by each shipping company. There are three ways to process the choice of repair yards: (1) Using private dockyards, (2) Using subscription shipyards, and (3) Selection using internal and external considerations of the company. In addition, the process of evaluating the shipyard is carried out in a conventional way, such as providing complaints or feedback in private for each Owner and the shipyard party.

In designing the ship repair yard rating application, a field survey was conducted to find out what criteria the Owner used in working the selection of the shipyard. Then there are nine criteria and by using the AHP method to weight the criteria, obtained: Repair quality (16.7%), Repair time (14.7%), Repair cost (12.5%), Repair facility (12.1%), Shipyard location (11.2%), Shipyard experience (10.4%), Shipyard workforce (8.8%), Shipyard service (7.6%), and Shipyard management (6.1%). The nine criteria are then used as the basis of a customer review-based shipyard rating system. There are two types of authority in this app, namely Admin and User. Admins have the power to approve or reject a review or shipyard account registered based on the inputted data and its verification files. In contrast, Users have the control to view the list, ratings, reviews, and value of a shipyard. In addition, Users can also create a shipyard account to register new dockyards that are not already on the shipyard list.

The shipyard rating system is implemented in the form of website-based applications. After testing and verifying the application with several respondents from shipping companies by running the application and conducting interviews with respondents using the questionnaire method, it was concluded that from the value range of 0-30, this application gets a value according to the results of the questionnaire of 28.5 out of 30, or 94.9%, which means the application can be said to be "mandatory" or indispensable to be applied in the shipyard rating.
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