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Sales Forecasting Application Using The Triple Exponential Smoothing Method Based on Android

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ABSTRACT

Forecasting is the art and science of predicting future events. This can be done by involving taking past data and placing it into the future with a form of mathematical model. The application of the Triple Exponential Smoothing Method is very appropriate to solve the above problems because the Triple Exponential Smoothing Method is used in short-term forecasting, usually only 1 month ahead. The Triple Exponential Smoothing method assumes that the data fluctuates around a fixed mean value, without an even trend or growth pattern. the author conducted research related to the calculation of the development of laptop purchases at CV.Gaharu.Com problems often occur, especially the problem ofcalculating laptop sales predictions such as the absence of a special system in calculating laptop sales in the coming period so that the company's stock often runs low and is not proportional to consumer demand which is growing rapidly and increasing, as well as in making laptop sales reports are still processed with a fairly simple application so that the reports obtained are less accurate. The research method used by the author is using the R&D (Research and Development) research method. The method of data collection was carried out in this study, namely by means of observation, interviews, and literature study. The steps taken are database design and describe the workflow of the application to be built using UML. At this stage the author designs the interface to produce an interface that is in accordance with the functions required for the application to be built. The system development method used by the researcher is the waterfall.

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1. INTRODUCTION

Technological development is a process that increases added value to its users which provides many benefits in progress in various aspects[1]. Information Technology is an inseparable part of the business world, especially in the face of increasingly competitive business competition. The need for information technology is a basic need for companies to survive in a competitive business world[2]. Forecasting is an attempt to predict future conditions by testing past conditions. The essence of forecasting is predicting future events based on past patterns and using forecasting policies with past patterns. Forecasting is the art and science of predicting future events. This can be done by taking past data and plotting it into the future with some form of mathematical modeling[3]. Forecasting can be used in any field which requires a prediction of the future whereabouts of data. Forecasting can be applied, one of which is to help budget sales for the next period[4].

In this study the authors have conducted research related to calculating the trend of buying laptops at CV.Gaharu.Com, the problems that often arise, especially the problem of calculating and forecasting laptop sales. These problems include the absence of a special system for calculating laptop sales in the coming period, so that company stocks often run out and are not commensurate with the increasing, rapidly growing consumer needs, and at the time of writing laptop sales reports, the application is still handled quite simply. so that the reports obtained are less accurate. Errors in filling in the laptop sales report above are due to the data processing system which always uses a semi-computer method, the limitation of recording by the Microsoft Excel program, which is ineffective because it takes a long time.

Based on the problems above, the researchers created a sales forecasting system using the Triple Exponential Smoothing method. The Application of the Triple Exponential Smoothing Method is very suitable for solving the problem above because the Triple Exponential Smoothing Method is used in short-term predictions, usually only 1 month ahead. The Triple Exponential Smoothing model assumes that the data fluctuates around a fixed average, without a uniform trend or growth pattern[5]. In the previous research, Ratih Yulia Hayuningtyas (2020) also conducted the title "Implementation of the Triple Exponential Smoothing Method for Predicting Sales of Medical Devices", Mukti Qamal (2018) "Forecasting Sales of Snacks Using the Single Exponential Smoothing Method", and Saiful Nur Budiman (2021) " Merchandise Stock Forecasting Using Single Exponential Smoothing Method". To make this system researchers use PHP programming and MySQL Database. PHP is the most widely used scripting language today. PHP is generally used for programming dynamic websites, but can also be used for other purposes[6] and MySQL is software or tools for managing or managing SQL by using queries or special languages. MySQL is also one of the open source software[7]. Based on the background above, the researcher took a title "Sales Forecasting Application Using the Triple Exponential Smoothing Method on Android-Based Gaharu.Com CV".

2. RESEARCH METHOD

This The research methodology used in conducting this research, namely Research and Development (R&D) is a research method that is intended to be used to create and test the effectiveness of a product or software. The R&D process basically consists of two main objectives, namely developing products and testing the effectiveness of products in achieving goals, the first goal is called development functionality while the second is called validation. Thus, the concept of R&D is more properly understood as a development effort accompanied by validation efforts[8]. For data collection methods in this study based on Research and Development (R&D) procedures. The following is a picture of the process or stages of R&D.

Figure 1 Process Stages of the R&D Model

The system development method used in making this system is the Waterfall Method which describes the development of a model that presents the process of software life rules with an influential system that can be called sequentially by preceding the process of analysis, design, coding, testing and also supporting parts[9]. The picture below is the process stages of the waterfall method.

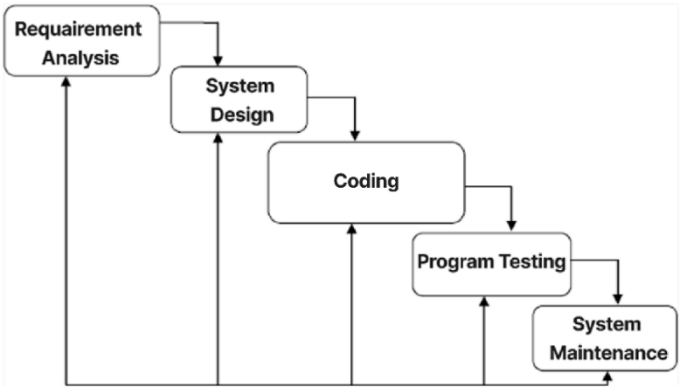

Figure 2 Stages of the Waterfall Method Process

Below is an explanation of the process stages in the image above, as follows:

1) Requirements Analysis

   Contains what must be in the design results in order to target and solve existing problems. Data needed to design this system are sales data, laptop purchase data, laptop data, and the programming language used to create applications is Java.

2) System Design

   In general, the system for purchasing laptops at CV Gaharu.Com uses the Triple Exponential Smoothing Method using the Unified Modeling Language design model which is designed using the Visio 2013 application.

3) Coding

   Coding is translating the design into a language the computer can recognize. Performed by programmers who translate transactions requested by users. This phase is the actual phase of working with the system. In the sense that the use of

computers is maximized at this stage. After the coding is complete, the test will run on the previously built system. The purpose of testing is to find and fix bugs in the system.

4) Program Testing

Thorough application testing is performed during this phase, including functional testing and system resorting style testing. Black box testing (interface testing) is software testing that tests the functionality of an application, not its structure or internal workings. No special knowledge of application code / internal structure and general programming skills are required. Testing is done on per-design tool blocks.

5) System Maintenance

There must be software changes that are hard to give to users. These changes may be related to errors, either because the software needs to adapt to a new environment (peripherals or operating system), or because users need to expand functionality.

3. RESULTS AND DISCUSSION

3.1. Current System Analysis and Problem Analysis

a. Running System Flowmap

The image below is a running system flowmap of the Sales System at CV Gaharu.com.

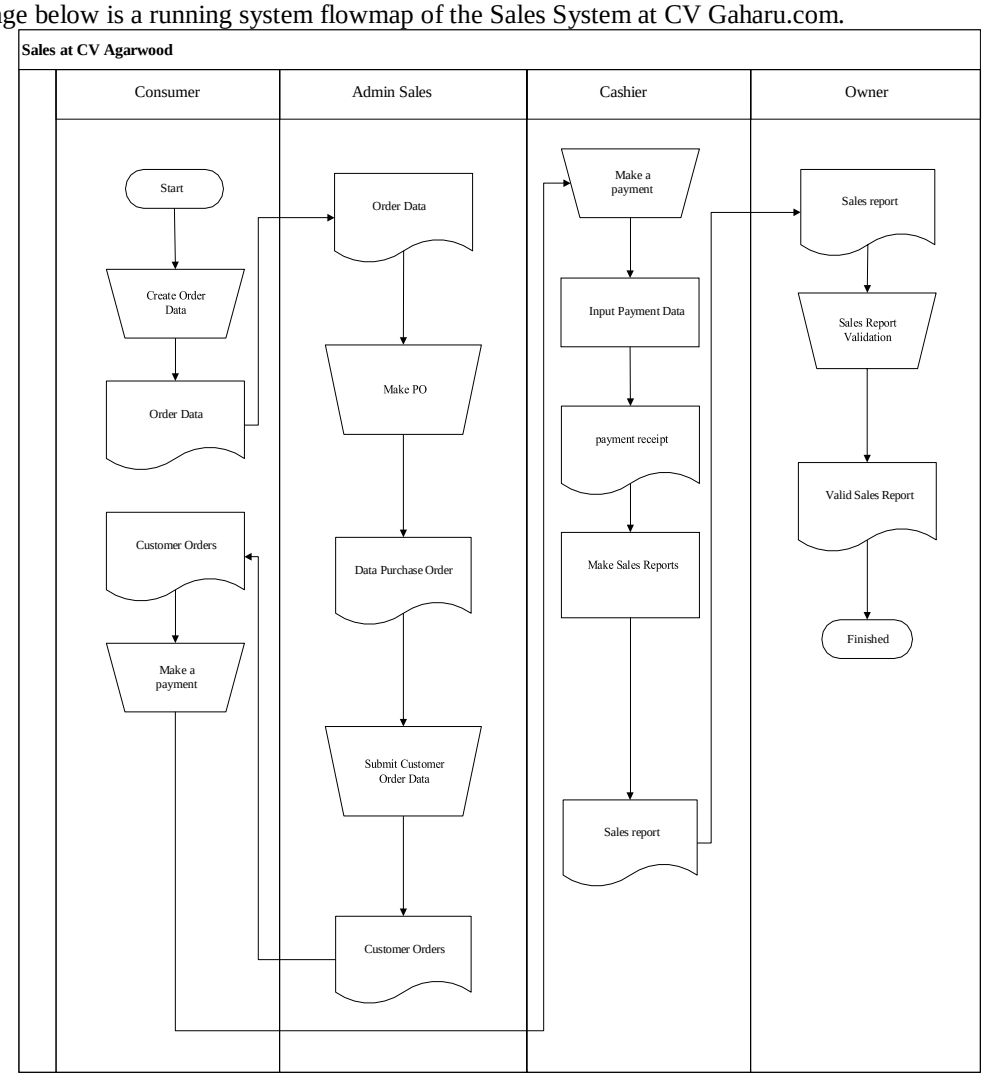

Figure 3 The Flowmap System is Running

b. Problem Analysis

CV Gaharu.com is a company engaged in the sale and purchase of laptops. At CV Gaharu.com, problems often occur, especially the problem of calculating laptop sales predictions. These problems include the absence of a special system for calculating laptop sales in the coming period so that the company's stock is often depleted and not comparable to consumer demand which is increasing rapidly and increasing, and in making laptop sales reports it is still processed with a fairly simple application so that the reports obtained are less accurate. The occurrence of an error in making the laptop sales report above was caused by a data processing system that still uses a semi-manual computer method, which is limited to recording using the Microsoft Excel program so it is inefficient because it takes a long time.

3.2. System Design

In this System Design in designing to build a system, researchers use UML modeling. The Unified Modeling Language (UML) is a graphical or image-based language for visualizing, specifying, creating and documenting software development systems based on object-oriented programming. UML itself provides a standard for creating blueprint systems that include business process concepts, class descriptions in certain programming languages, database schemas, and components needed for system software[10]. The following is a UML diagram used by researchers, as follows: Use case diagram; is an external entity (in the form of an interface) of the system that receives orders from actors in the form of events. This use case refers to the implementation in the form of a set of messages between related objects[11]. Activity diagram; is describing the workflow or activity of a system or business process or menu in the software[12]. Sequence Diagram explains that sequence diagrams describe the behavior of objects in use cases by estimating the lifetime of objects and messages sent and received between objects[13]. Class diagrams are used to visualize the structure of the classes of a system and are the most widely used type of diagram. Class diagrams can also show the relationships between classes and detailed explanations for each class in the design model (logical view) of a system. During the design process, class diagrams play a role in capturing the structure of all the classes that make up the system architecture being created[14].

3.3. Implementation

1) Implementation of the Triple Exponential Smoothing Method in a Case Study of CV Gaharu.Com

The Triple Exponential Smoothing method can display forecasting data choices, the constant value in the image below serves to determine the level of forecasting accuracy where the smaller the constant value, the more sales report data that will be taken into account when making predictions, when selecting forecasting data the program will display data forecasting, as follows: The provisions for the values of α and β used are:

Table 1. Constant Value

No	α	Q
1	0.1	0.1
2	0.2	0.2
3	0.3	0.3
4	0.4	0.4
5	0.5	0.5
6	0.6	0.6
7	0.7	0.7
8	0.8	0.8
9	0.9	0.9

Cv Gaharu.Com made overall sales for 1 (one) year for the period January 2021 - December 2021 with the following data:

Table 2. Overall Sales Data for 2021

Month	Production
January	78 Unit
February	85 Unit
Maret	72 Unit
April	74 Unit
May	65 Unit
June	78 Unit
July	72 Unit
August	73 Unit
September	61 Unit
October	67 Unit
November	71 Unit
December	64 Unit

Will predict the 13th Period with a value of α = 0.3.

a. The first stage of Single Exponential Smoothing: $S'_t = aX_t + (1 - a)\, S't\text{-}1$ **X1**

1. Exponential prediction in January
   $S'_1 = 78$
2. Exponential prediction in February
   $S'_2 = (0.3)\ 85 + (1 - 0.3)\ 78$
   $S'_2 = 25.5 + 54.6 = 80.1$
3. Exponential prediction in Maret
   $S'_3 = (0,3)\ 75 + (1 - 0,3)\ 132$
   $S'_3 = 22,5 + 92,4 = 114,9$
4. Exponential prediction in April
   $S'_4 = (0,3)\ 74 + (1 - 0,3)\ 77,67$
   $S'_4 = 22.2 + 54.369 = 76.569$
5. Exponential prediction in May

S'_5= (0,3) 65 + (1 − 0,3) 76.569
S'_5= 19.5 + 53,5983 = 73.0983

6. Exponential prediction in June
   S'^6= (0,3) 78 + (1 − 0,3) 73.0983
   S'^6= 23.4 + 51.16881 = 74.56881
7. Exponential prediction in July
   S'^7= (0,3) 72 + (1 − 0,3) 74,56881
   S'^7= 21.6 + 52.198167 = 73.798167
8. Exponential prediction in August
   S'^8= (0,3) 73 + (1 − 0,3) 73.798167
   S'^8= 21.9 + 51,6587169 = 73.5587269
9. Exponential prediction in September
   S'^9= (0,3) 61 + (1 − 0,3) 73.5587269
   S'_9= 18.3 + 51.49110183 = 69.79110183
10. Exponential prediction in October
    S'_{10} = (0,3) 67 + (1 − 0,3) 69.79110183
    S'_{10} = 20.1 + 48.853771281 = 68.953771281
11. Exponential prediction in November
    S'_{11} = (0,3) 71 + (1 − 0,3) 68.953771281
    S'_{11} = 21.3 + 48.2676398967 = 69.5676398967
12. Exponential prediction in December
    S'_{12} = (0,3) 64 + (1 − 0,3) 69.5676398967
    S'_{12} = 19.2+ 48.6973479277 = 67.8973479277

b. The first stage of Double Exponential Smoothing: $S''_t = aS'_t + (1 - a)\, S''_t1$ **X2**

1. January Double Exponential Prediction
   S”1= 78
2. February Double Exponential Prediction
   S”2= (0,3) 80.1 + (1 − 0,3) 78
   S”2= 24.03 + 54.6
   S”2= 78.63
3. Maret Double Exponential Prediction
   S”3= (0,3) 77.67 + (1 − 0,3) 78.63
   S”3=23.301 +55.041
   S”3= 78.342
4. April Double Exponential Prediction
   S”4= (0,3) 76.569 + (1 − 0,3) 78.342
   S”4= 22.9707+ 54.8394
   S”4= 77.8101
5. May Double Exponential Prediction
   S”5= (0,3) 73.0983 + (1 − 0,3) 77.8101
   S”5= 21.92949 + 54.46707
   S”5= 76.39656
6. June Double Exponential Prediction
   S”6= (0,3) 74.56881 + (1 − 0,3) 76.39656
   S”6= 22.370643 + 53.477592
   S”6= 75.848235
7. July Double Exponential Prediction
   S”7= (0,3) 73.798167 + (1 − 0,3) 75.848235
   S”7= 22.1394501 + 53.0937645
   S”7= 75.2332146
8. August Double Exponential Prediction
   S”8 = (0,3) 73.5587269 + (1 − 0,3) 75.848235
   S”8 = 22.0671807 + 52.66325022
   S”8 = 74.73043092
9. September Double Exponential Prediction
   S”9= (0,3) 69.79110183 + (1 − 0,3) 74.73043092
   S”9= 20.937330549 + 52.311306144
   S”9= 73,248632193
10. October Double Exponential Prediction
    S”10 = (0,3) 68.953771281 + (1 − 0,3) 73,248632193
    S”10 = 20.6861313843 + 51.2740425351
    S”10 = 71.9601739194
11. November Double Exponential Prediction
    S”11 = (0,3) 69.5676398967 + (1 − 0,3) 71.9601739194
    S”11 = 20.870291969 + 50.3721217436
    S”11 = 71.2424137126
12. December Double Exponential Prediction
    S”12 = (0,3) 67.8973479277 + (1 − 0,3) 71.2424137126
    S”12 = 20.3692043783 + 498696895988
    S”12 = 70.2388939771

c. Triple Exponential Calculation Steps: $S'''_t = a\, S''_t + (1 - a)S''_t\text{-}1$ **X3**

1.
2. Prediction of the trend value in January
   S'''_t = 78
3. Prediction of the trend in February
   S'''_t = 0.3 (78.63) + 0.7(78)
   S'''_t = 23.589 + 54,6
   S'''_t = 78.189
4. Prediction of the trend in Maret
   S'''_t = 0.3 (78.342) + 0.7(78.189)
   S'''_t = 23.5026 + 54.7323
   S'''_t = 78.2349
5. Prediction of the trend in April
   S'''_t = 0.3 (77.8101) + 0.7(78.2349)
   S'''_t = 23.34303 + 54.76443
   S'''_t = 78.10746
6. Prediction of the trend in May
   S'''_t = 0.3 (76.39656) + 0.7(78.10746)
   S'''_t = 22.918968 + 54.675222
   S'''_t = 77.59419
7. Prediction of the trend in June
   S'''_t = 0.3 (75.848235) + 0.7(77.59419)
   S'''_t = 22.7544705 + 54.315933
   S'''_t = 77.0704035
8. Prediction of the trend in July
   S'''_t = 0.3 (75.2332146) + 0.7(77.0704035)
   S'''_t =22.56996438 + 53.94928245
   S'''_t = 76.51924683
9. Prediction of the trend in August
   S'''_t = 0.3 (74.73043092) + 0.7(76.51924683)
   S'''_t = 22.419129276 + 53.563472781
   S'''_t = 75.982602057
10. Prediction of the trend in September
    S'''_t = 0.3 (73,248632193) + 0.7(75.982602057)
    S'''_t =21.9745896358 + 53.1878214399
    S'''_t = 75.1624110757
11. Prediction of the trend in October

S'''_t = 0.3 (71.9601739194) + 0.7(75.1624110757)
S'''_t = 21.5880521758 + 52.613687753
S'''_t = 74.2017399288

12. Prediction of the trend in November
S'''_t = 0.3 (71.2424137126) + 0.7(74.2017399288)
S'''_t =21.3727241138 + 51.9412179502
S'''_t = 73.313942064

13. Prediction of the trend in December
S'''_t = 0.3 (70.2388939771) + 0.7(73.313942064)
S'''_t = 21.0716681931 + 51.3197594448
S'''_t = 72.3914276379

d. Steps to calculate the value of a: at = 3S′t - 3S′′t + S′′′t **X4**

1. Calculates the value of a in January
a_1 = 3.78-3.78+78
a_1 = 78
2. Calculates the value of a in February
a_2 = 3(80.1)-3(78.63)+ 78.189
a_2 = 240.3 – 235.89+78.189
a_2 = 82.599
3. Calculates the value of a in Maret
a_3 = 3(77.67)-3(78.342)+ 78.2349
a_3 = 233.01 – 235.026+78.2349
a_3 = 76.2189
4. Calculates the value of a in April
a_4 = 3(76.569)-3(77.8101)+ 78.10746
a_4 =229.707– 233.4303 + 78.10746
a_4 = 74.38416
5. Calculates the value of a in May
a_5 = 3(73.0983)-3(76.39656)+ 77.59419
a_5 = 219.2949 – 229,18968 + 77.59419
a_5 = 67,69941
6. Calculates the value of a in June
a_6 = 3(74.56881)-3(75.848235)+ 77.0704035
a_6 =223,70643 – 227.544705 + 77.0704035
a_6 = 73.2321285
7. Calculates the value of a in July
a_7 = 3(73.798167)-3(75.2332146)+ 76.51924683\
a_7 =221.39450 – 225.6996438 + 76.51924683
a_7 = 72.21410403
8. Calculates the value of a in August
a_8 = 3(73.5587269)-3(74.73043092)+ 75.982602057
a_8 =220.6761807 – 224.19129276 + 75.982602057
a_8 = 72.467489997
9. Calculates the value of a in September
a_9 = 3(69.79110183)-3(73,248632193)+ 75.1624110757
a_9 =209.3730549 – 219.745896579 + 75.162411075
a_9 = 64.7898199267
10. Calculates the value of a in October
a_{10} = 3(68.953771281)-3(71.9601739194)+ 74.2017399288
a_{10} = 206.861313843 – 215.8805217582+74.2017399288
a_{10} = 65,1825320136
11. Calculates the value of a in November
a_{11} = 3(69.5676398967)-3(71.2424137126)+ 73.313942064
a_{11} = 208.7029196901 – 213.7272411378 +73.313942064
a_{11} = 68.2896206163
12. Calculates the value of a in December
a_{12} = 3(67.8973479277)-3(70.2388939771)+ 72.3914276379
a_{12} = 203.6920437831 – 210.7166819313 + 72.3914276379
a_{12} = 65.3667894897

e. B value calculation steps: $b_t = \frac{a}{2(1-a)2}[(6 - 5.a)S't - (10- 8.a)S''t + (4 - 3.a)\ S'''_t]$ **X5**

1. Calculation of the value of b1 in January
b_1 = $\frac{0.3}{2(1-0.3)^2}$ x ((6-(5*0.3)78)-(10-(8x0,3)78)+(4-(3x0.3)78))
b_1 = 0
2. Calculation of the value of b2 in February
b_2 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)80.1)-(10-(8x0,3)78.63)+(4-(3x0.3)78.189))
b_2 = -1.6065
3. Calculation of the value of b3 in Maret
b_3 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)77.67)-(10-(8x0,3)78.342)+(4-(3x0.3)78.234))
b_3 = -1.028
4. Calculation of the value of b4 in April
b_4 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)76.569)-(10-(8x0,3)77.810)+(4-(3x0.3)78.187))
b_4 = -1.351
5. Calculation of the value of b5 in May
b_5 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)73.098)-(10-(8x0,3)76.396)+(4-(3x0.3)77.594))
b_5 = -3.406
6. Calculation of the value of b6 in June
b_6 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)74.568)-(10-(8x0,3)75.848)+(4-(3x0.3)77.070))
b_6 = -0.578
7. Calculation of the value of b7 in July
b_7 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)73.798)-(10-(8x0,3)75.233)+(43x0.3)76.519))
b_7 = -0,756
8. Calculation of the value of b8 in August

b_8 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)73.558)-(10-(8x0,3)74.730)+(4-(3x0.3)75.982))

b_8 = 0.214x((-217,841)-(-321,781)+(-115,692)) = -2,515

9. Calculation of the value of b9 in September

b_9 = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)69.791)-(10-(8x0,3)73.248)+(4-(3x0.3)75.162))

b_9 = -2.945

10. Calculation of the value of b10 in October

b_{10} = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)68.953)-(10-(8x0,3)71.960)+(4-(3x0.3)74.201))

b_{10} = -2.0156

11. Calculation of the value of b11 in November

b_{11} = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)69.567)-(10-(8x0,3)71.242)+(4-(3x0.3)73.313))

b_{11} = -0,342

12. Calculation of the value of b12 in December

b_{12} = $\frac{0.3}{2(1-0.3)^2}$ x((6-(5*0.3)67.897)-(10-(8x0,3)70.238)+(4-(3x0.3)72.391))

b_{12} = -1.1816

f. **C value calculation steps: ct □ □a² /(1□ □a)²(S't □ 2S''t □ S'''t)**

1. Calculates the value of C1 in January

C_1 = 0.3²/(1-0.3)² *((78- (2*78)+78))

C_1 = 0

2. Calculates the value of C2 in February

C_2 = 0.3²/(1-0.3)² *((80.1- (2*78.63)+ 78.189))

C_2 = -0.189

3. Calculates the value of C3 in Maret

C_3 = 0.3²/(1-0.3)² *((77.67 (2*78.342)+78.234))

C_3 = -0.130

4. Calculates the value of C4 in April

C_4 = 0.3²/(1-0.3)² *((76.569-(2*77.810)+78.187))

C_4 = 0.158

5. Calculates the value of C5 in May

C_5 = 0.3²/(1-0.3)² *((73.098-(2*76.396)+77.594))

C_5 = 0.385

6. Calculates the value of C6 in June

C_6 = 0.3²/(1-0.3)² *((74.568-(2*75.845)+77.070))

C_6 = -0.10

7. Calculates the value of C7 in July

C_7 = 0.3²/(1-0.3)² *((73.798-(2*75.233)+76.519))

C_7 = -0027

8. Calculates the value of C8 in August

C_8 = 0.3²/(1-0.3)² *((73.558-(2*74.730)+75.982))

C_8 = 0.146

9. Calculates the value of C9 in September

C_9 = 0.3²/(1-0.3)² *((69.791-(2*73.248)+75.162))

C_9 = -0283

10. Calculates the value of C10 in October

C_{10} = 0.3²/(1-0.3)² *((68.53-(2*71.960)+74.201))

C_{10} = -0.140

11. Calculates the value of C11 in November

C_{11} = 0.3²/(1-0.3)² *((69.567-(2*71.242)+73.313))

C_{11} = 0,072

12. Calculates the value of C12 in December

C_{12} = 0.3²/(1-0.3)² *((67.897-(2*70.238)+72.391))

C_{12} = -0.034

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Forecasting results for January 2022 are:

$F_t + m = a_t + b_t(1) + ½\ c_t(1)$

$= 65{,}36 + -1.1816\ (1) + (1/2\ *-0.034(1))$

$= 64.1614$

Thus the results of forecasting sales of all products in January 2022 are 64 units. And the number of forecasts in January is stable with data for December 2021.

2) System Implementation

a. Customer

After logging in using an existing account, you will be redirected to the product data view which functions to find out and display product data.

Figure 4 Display Product Form

The image below is an order data display that functions to find out and display order data.

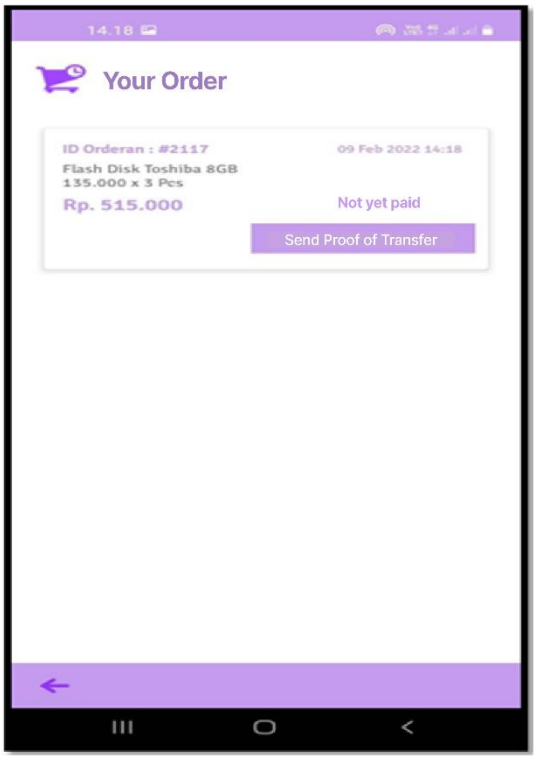

Figure 5 Display Order Data Form

The image below is a payment data display that is used to determine and display payment data.

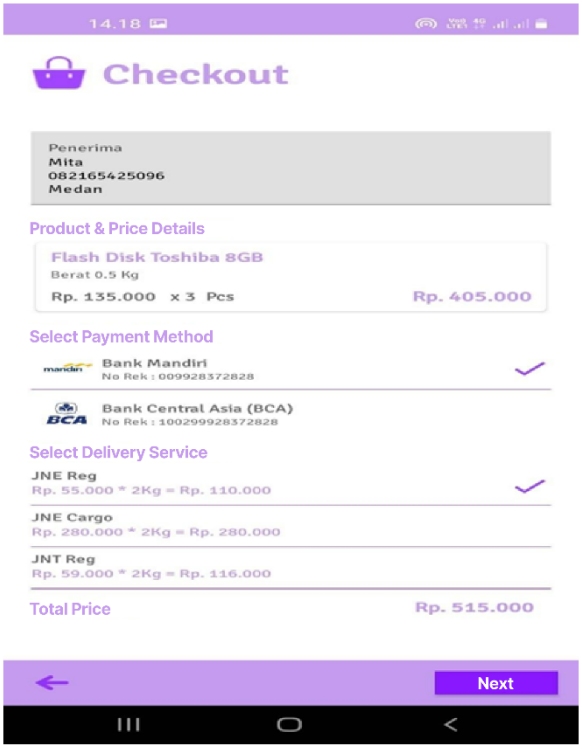

Figure 6 Display of Payment Data Form

The image below is a screen display of the payment order form which is used to enter payment order details.

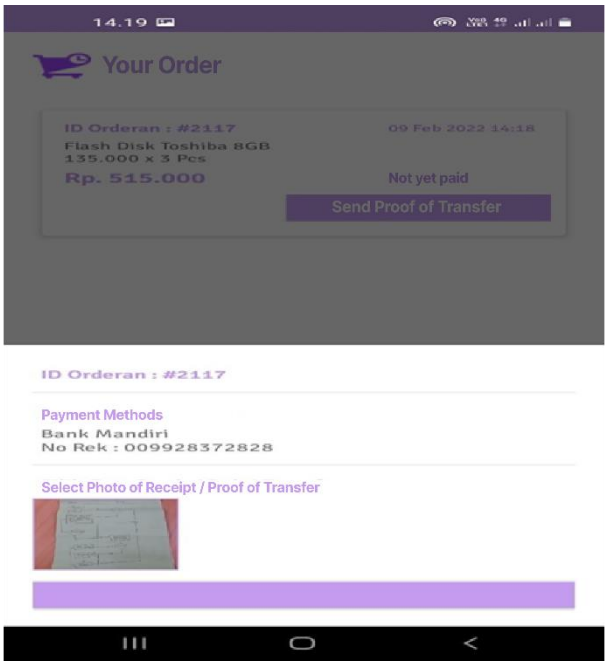

Figure 7 Display Order Payment Confirmation Form

b. Admin

After logging in using an existing account, then enter the customer data form so you can view customer data.

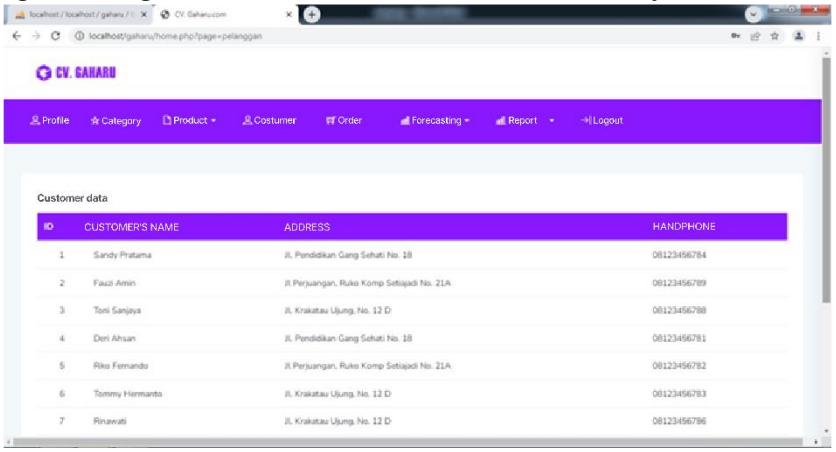

Figure 8 Display Customer Data Form

The image below is a form that will display the order data options. When selecting order data, the program will display order data.

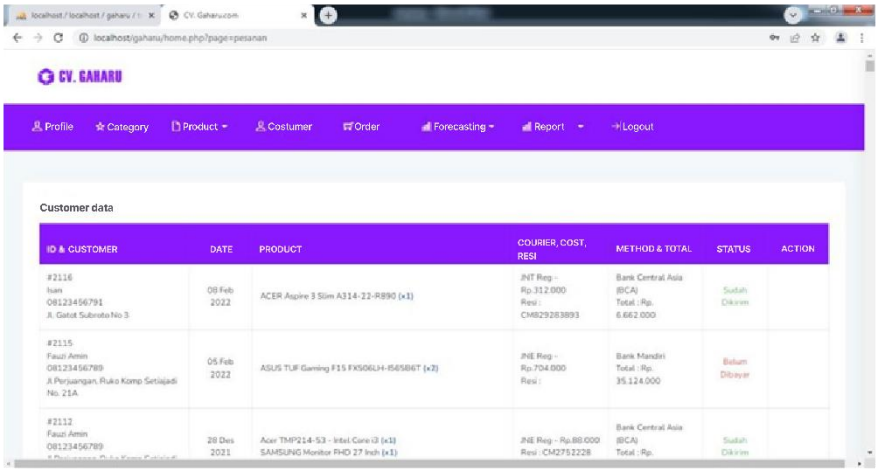

Figure 9 Display Order Data Form

The image below is a form that will display payment data options. When selecting product data, the program will display payment data.

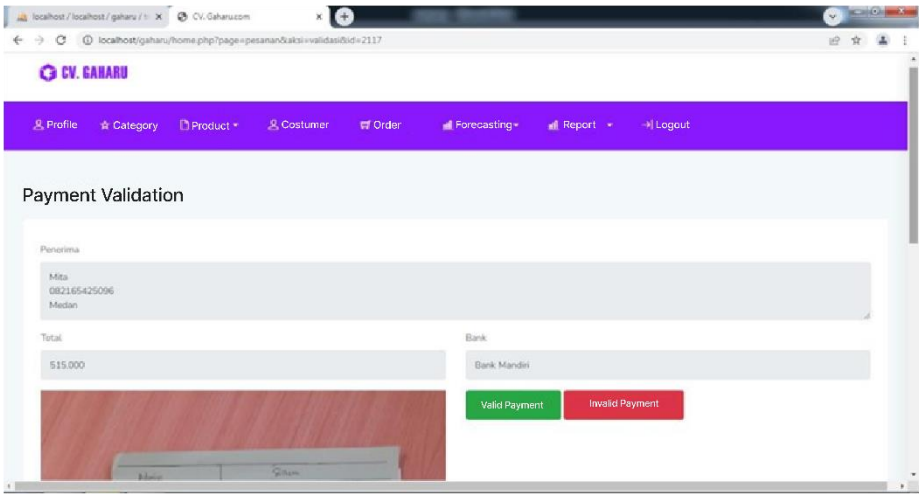

Figure 10 Display of Payment Data Form

The image below is a form that will display forecasting data choices, the constant value in the image below serves to determine the level of forecasting accuracy where the smaller the constant value, the more sales report data that will be taken into account when making predictions, when selecting forecasting data, the program will display forecasting data

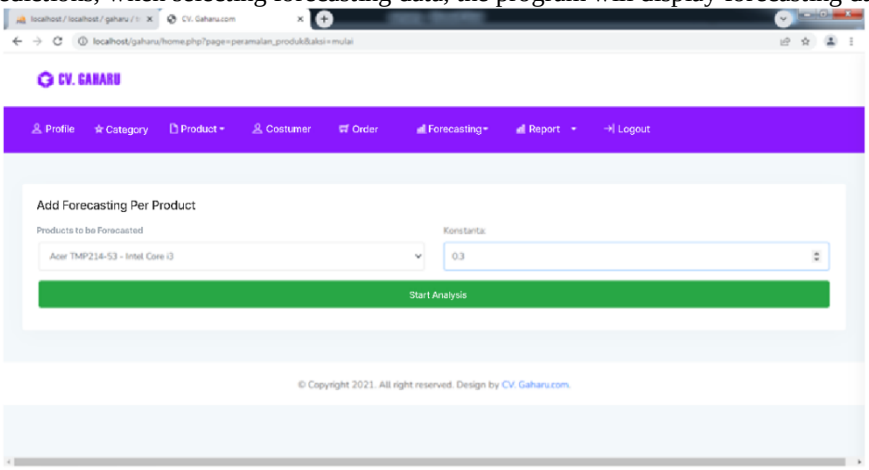

Figure 11 Display of Forecasting Data Form

The image below is a form that will display forecasting data options. When selecting forecasting data, the program will display forecasting data.

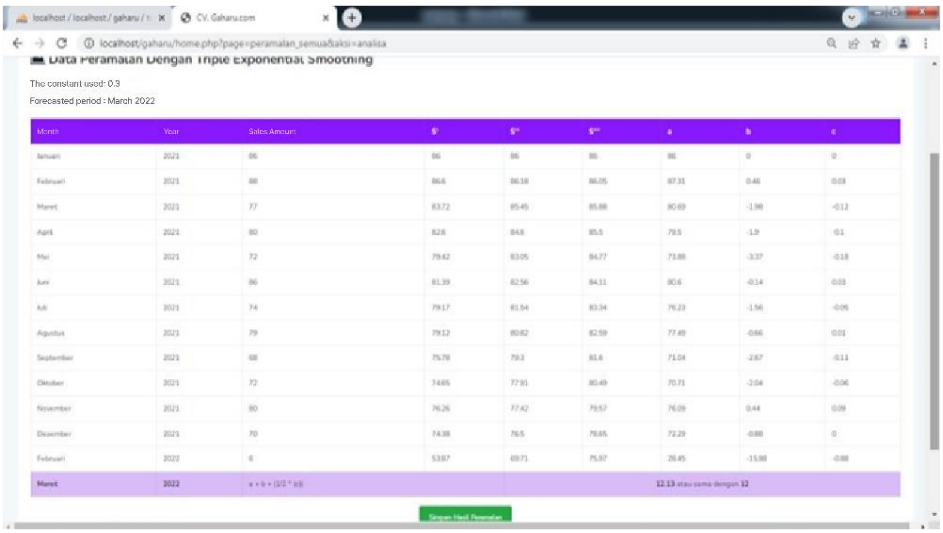

Figure 12 Display of Forecasting Data Form for All Products

The image below is a form that displays options for forecast report data for all products. When you select forecast report data for all products, the program will display forecast report data for all products.

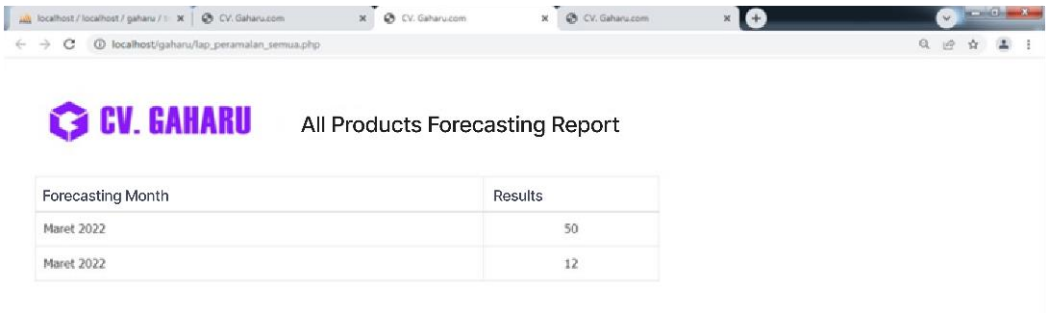

Figure 13 View of All Products Forecasting Report Data Form

3.4. System Testing

To test the Sales Forecasting Application Using the Triple Exponential Smoothing Method at CV Gaharu.Com, the Black-box Testing method was used in carrying out the test and was tested by Alvin Wijaya as manager at CV Gaharu.Com. The Blackbox Testing method focuses on implementing the software to be developed for the user requirements specified at the start of the design. The purpose of testing is to determine whether the functions, inputs and outputs of the software meet the required specifications. Black box tests are carried out according to the planned test tasks. The black box test results show that all system processes are working properly[15]. Below are the results of tests conducted by researchers:

Table 3. Test Result

No	Test Scenario	Expected results	Success Percentage
1	Display Product Form (Customer)	Appropriate	99%
2	Display Order Data Form (Customer)	Appropriate	99%
3	Display of Payment Data Form (Customer)	Appropriate	98%
4	Display Order Payment Confirmation Form (Customer)	Appropriate	98%
5	Display Customer Data Form (Admin)	Appropriate	98%
6	Display Order Data Form (Admin)	Appropriate	98%
7	Display of Payment Data Form (Admin)	Appropriate	99%
8	Display of Forecasting Data Form (Admin)	Appropriate	99%
9	Display of Forecasting Data Form for All Products (Admin)	Appropriate	98%
10	View of All Products Forecasting Report Data Form (Admin)	Appropriate	98%

4. CONCLUSION

Based on the research that has been done by the author, several conclusions are drawn including the following. Electronic media has been developed that is capable of facilitating the storage of theses within the Faculty of Science and Technology UIN-SU, a platform that can assist the performance of lecturers and students in searching for data related to theses such as finding theses that have been published within the Faculty of Science and Technology, knowing the number of students who have have been guided by lecturers, even reminders (alerts) to students who have not uploaded their theses. Then the application of Vue.js as a framework on this website makes the website easier to develop so that by implementing the single web application feature on this repository system it can speed up website performance in presenting data, and make the website more comfortable to use.

5. SUGGESTION

In this research there are still many shortcomings that may be refined in the future by future research. Suggestion that can be used is that the application might be more user friendly so that it is easier to use again and maybe more features can be added.

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