

IMPLEMENTATION AND TESTING

Implementation

Implementation of Simple Linear Regression Algorithms in the following program:

1. determine the value of a constant and the regression coefficient b

```
1. public function konstanta(){
2.   $a = ((array_sum($this->jb) * array_sum($this->b12)) -
   (array_sum($this->b1) * array_sum($this->xy))) / (($this->n *
   array_sum($this->b12)) - (array_sum($this->b1) *
   array_sum($this->b1)));
3.   $this->a = $a;
4.   $b = (($this->n * array_sum($this->xy)) - (array_sum($this-
   >b1) * array_sum($this->jb))) / (($this->n * array_sum($this-
   >b12)) - (array_sum($this->b1) * array_sum($this->b1)));
5.   $this->b = $b;
6. }
```

the code in number 1 is a function of php containing the place variables a and b, code number 2 contains the variable function to calculate the value of a, code number 4 serves to calculate the value b.

2. determine the value x2, y2 and xy

```
1. $this->b12 = array_map(function($n){
   return $n * $n;
}, $this->b1);
2. $this->jb2 = array_map(function($n){
   return $n * $n;
}, $this->jb);
3. for($i=0; $i<$this->n; $i++){
4.   $this->xy[$i] = $this->b1[$i] * $this->jb[$i];
5. }
```

the code in number 1 is a variable from php which functions to calculate the value of x2, the code in number 2 functions to calculate the value of y2, code number 4 functions to calculate xy.

3. determine the values forecasting Y

```
1. $yy = $this->a + ($this->b * $xfore);
2. return $yy;
```

This process serves to look for forecasting values based on calculation of variables a and b.

4. Calculate the accuracy of forecasting

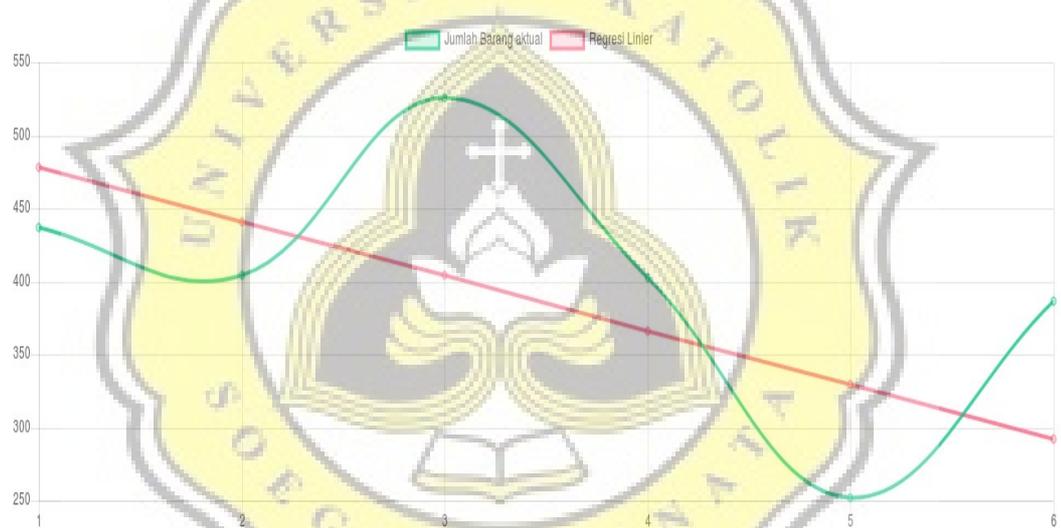
1. $\$mape = (\text{array_sum}(\$totalError) / \$cd) * 100;$
2. `echo "MAPE : ".round($mape,3)." % \n";`

This process is to find the average error as the accuracy of forecasting

Testing

Testing this program was carried out in 4 experiments using different data, namely LPG 50kg, 12kg, Bg12kg, Bg5kg. At this stage the data taken is semester I, which is January to June and the semester II is July to December.

The following picture of the test results using data:



The first experiment using lpg 50kg in the first semester. From the graph, it can be seen in January to June which has decreased with MAPE 17.6%. Because the farm does not use much room temperature control on the chicken coop. Can be seen in Illustration 5.1

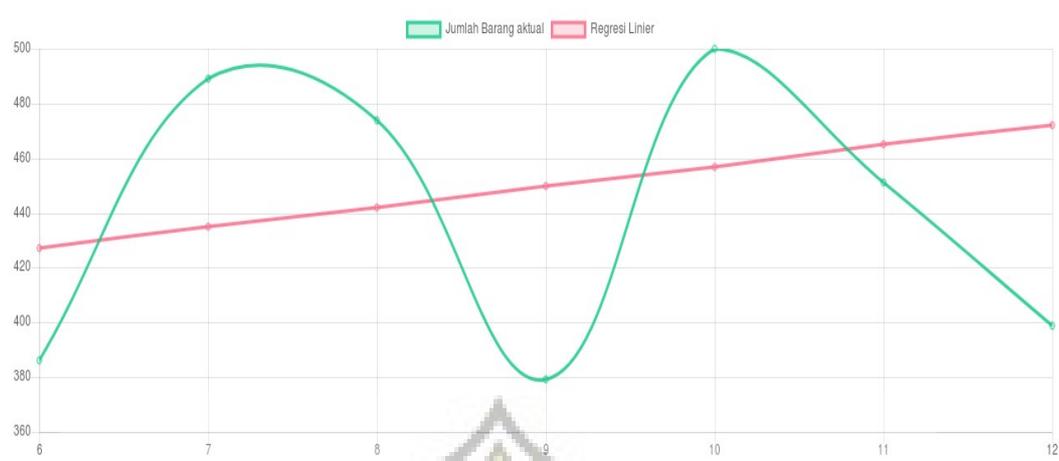


Illustration 5.2: Semester II 50kg

The second experiment was using 50kg lpg in the second semester. From the graph it can be seen June to December experiencing an increase with MAPE 6.42%. Because farms need a temperature cage warmer in the rainy season. Can be seen in Illustration 5.2



The third experiment using lpg 12kg in the first semester. From the graph, it can be seen from January to June with a very high increase with MAPE 13.41%. Because of the fasting day and Eid holiday the cooking needs of the people are increasing. Can be seen in Illustration 5.3



The fourth experiment using lpg 12kg in semester II. From the graph it can be seen June to December experiencing an increase with MAPE 4.35%. Because of the school holidays and Christmas cooking needs increase. Can be seen in Illustration 5.4

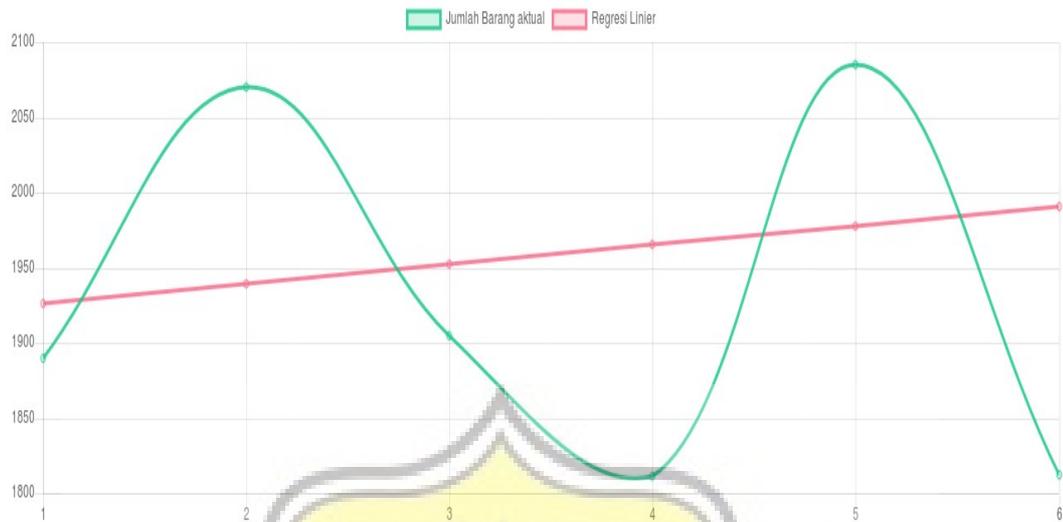
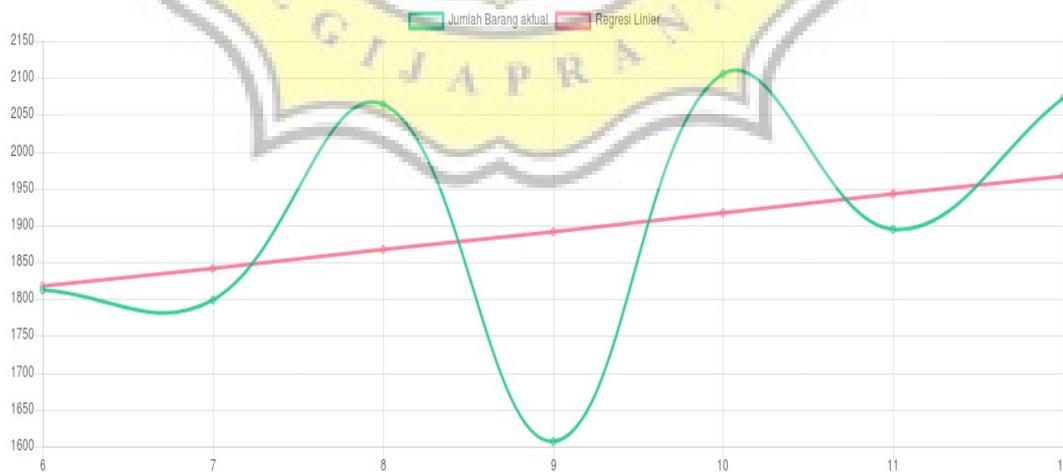


Illustration 5.5: Semester I BrightGas 12kg

The fifth experiment using brightgas 12kg in the first semester. From the graph can be seen in January to June experiencing an increase with MAPE 5.70%. Because of the fasting and Eid holidays the cooking needs of the people are increasing. Can be seen in Illustration 5.5

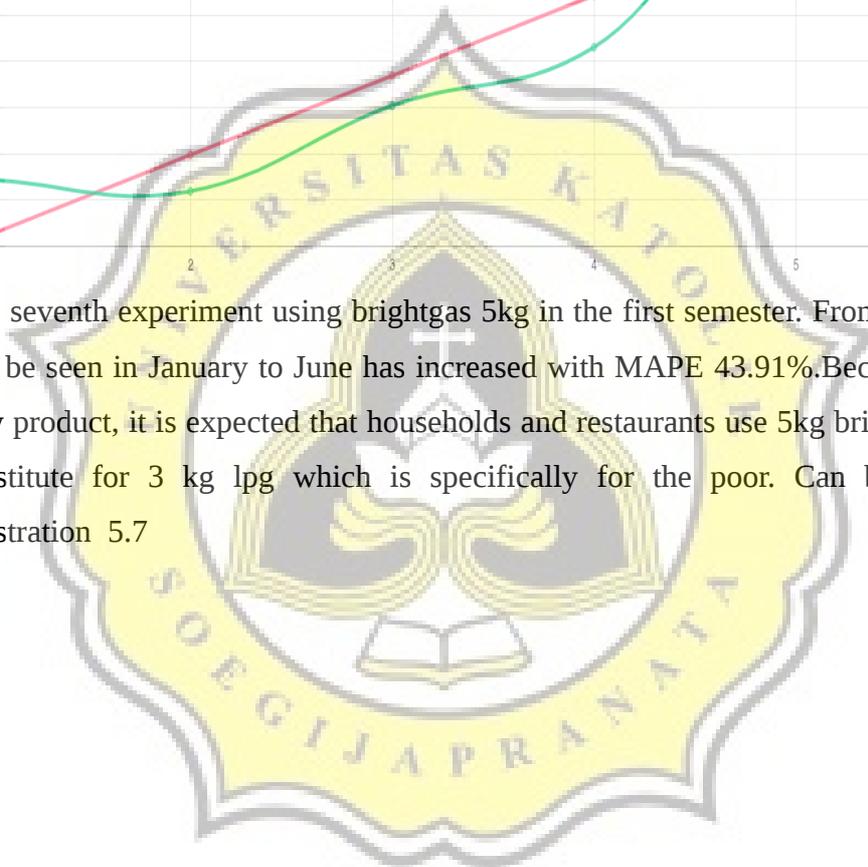


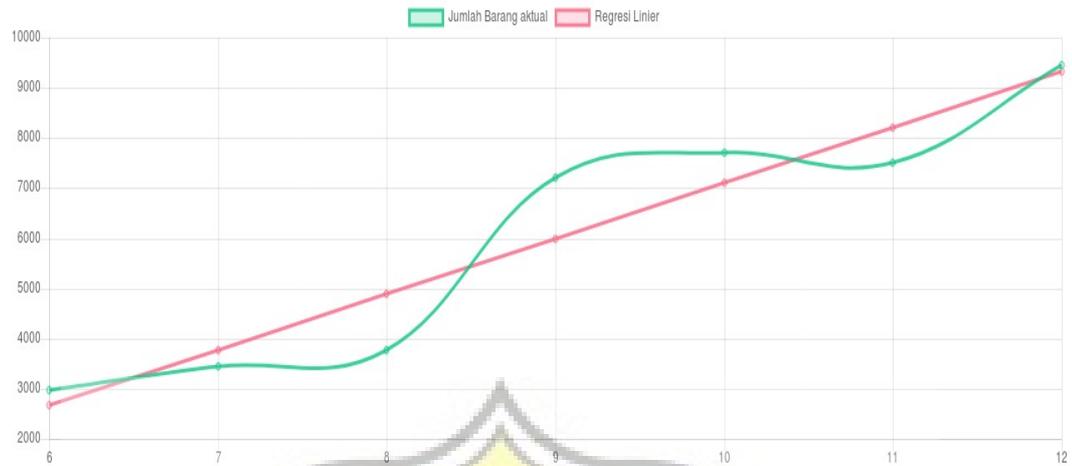
The sixth experiment using brightgas 12kg in semester II. From the graph it can

be seen June to December experiencing an increase with MAPE 3.88%. Because of the school holidays and Christmas cooking needs increase. Can be seen in Illustration 5.6



The seventh experiment using brightgas 5kg in the first semester. From the graph can be seen in January to June has increased with MAPE 43.91%. Because it is a new product, it is expected that households and restaurants use 5kg brightgas as a substitute for 3 kg lpg which is specifically for the poor. Can be seen in Illustration 5.7





The eighth experiment using brightgas 5kg in the first semester. From the graph, it can be seen in January to June increasing with MAPE 7.20%. Because it is a new product, it is expected that households and restaurants use 5kg brightgas as a substitute for 3 kg lpg which is specifically for the poor . Can be seen in Illustration 5.8

