

# Duck Meat Sales Prediction System at Cv. Berkah Farm Mandiri Based on Monthly Sales Data Using Web-Based Multiple Linear Regression Method

M. Rif'an Khariri<sup>1\*</sup>, Retno Wardhani<sup>2</sup>, Ayu Ismi Hanifah<sup>3</sup>

<sup>1,2,3</sup> Informatics Engineering Study Program, Faculty of Science and Technology, Islamic University of Lamongan, East Java, Indonesia

[rifanm228@gmail.com](mailto:rifanm228@gmail.com)<sup>1</sup>, [retno.teknik@unisla.ac.id](mailto:retno.teknik@unisla.ac.id)<sup>2</sup>, [3ayuismihanifah@gmail.com](mailto:3ayuismihanifah@gmail.com)<sup>3</sup>

## Abstract

CV. Berkah Farm Mandiri was a livestock business focused on the production and sale of duck meat. In dealing with monthly sales fluctuations, a system capable of accurately predicting sales was needed to support stock and production planning. This study aimed to develop a web-based sales prediction system using the Multiple Linear Regression method, utilizing historical sales data as the basis for analysis. The variables used in the model included price, day type (weekday/weekend), and season (dry/rainy). The data used in this research consisted of 100 sales records obtained through direct observation. The test results showed that the system could predict sales with an accuracy rate of 94.53%, based on the calculation of the Mean Absolute Percentage Error (MAPE), indicating that the method used was highly accurate. The system was implemented as a web application to allow flexible access for management. With this system, CV. Berkah Farm Mandiri could enhance decision-making efficiency regarding stock and product distribution. This research was also expected to serve as a reference for other livestock businesses in implementing data-driven predictive approaches.

**Keywords:** Sales Prediction, Multiple Linear Regression, Duck Meat, Web Application, MAPE

## 1. Introduction

Duck is one type of poultry that is widely utilized, both for its meat and eggs. Along with the increasing market demand for duck meat, the available supply has not been able to fully meet the needs. This condition has encouraged the community to engage in duck farming businesses, as it is considered to have promising profit potential. However, the growing number of entrepreneurs in this sector has also led to a high level of competition. Therefore, efforts are needed to increase competitiveness through improving the quality of duck products[1]. CV Berkah Farm Mandiri is a livestock business engaged in both production and sales of duck meat, located at Jl. Ayam Alas No.18, Waru Lor, Sumber Agung, Mantup District, Lamongan Regency, East Java. In practice, the company faces challenges in forecasting monthly duck meat sales. Fluctuating sales often lead to mismatches between the stock prepared and market demand. Excess stock carries the risk of financial loss, while insufficient stock can result in missed sales opportunities.

The rapid development of information technology provides opportunities for business actors to optimize production management through data-based prediction systems. Prediction itself is the process of forecasting future values or events based on existing information, utilizing historical data and patterns to generate relevant estimations[2]. The use of web-based systems is considered an appropriate choice because they are more easily accessible anytime and anywhere, and can assist business managers in making decisions related to production planning and sales. Thus, the implementation of sales prediction systems based on information technology is expected to support decision-making in a more effective, efficient, and data-driven manner.

Several previous studies are relevant to this issue. Research [3]“ Unilever Product Sales Prediction Using Linear Regression Method,” which produced a system with high prediction accuracy, indicated by the smallest MAPE value of 1% on Sunsilk Conditioner products. Research [4]“Application of Linear Regression Method in Property Sales Prediction at PT XYZ,” which demonstrated that this method can provide highly accurate prediction results based on MSE, RMSE, and MAPE tests. Research [5]“Poultry Meat Production Prediction for 2023-2027,” which produced a forecast showing a consistent increase in poultry production until 2027. Research [6]“Sales Prediction System Using Weighted Moving Average (WMA) and Economic Order Quantity (EOQ) at Toko Mariah,” which resulted in a system capable of predicting sales and determining optimal order quantities to minimize inventory costs. Research[7]“Linear Regression for Predicting Poultry Meat Consumption and Production,” which produced relatively small prediction errors, namely 6.81% for production and only 0.46% for consumption.

From the problems above, it is necessary to develop a web-based duck meat sales prediction system at CV Berkah Farm Mandiri using Multiple Linear Regression. This system is expected to help the company more accurately forecast monthly sales, thereby reducing the risk of overstocking or understocking, and supporting more effective and efficient decision-making.

## 2. Methodology

### 2.1. Analysis Method

#### 2.1.1. Linear Regression Analysis

Linear Regression Analysis is used to examine the linear relationship between two or more independent variables ( $X_1, X_2, \dots, X_n$ ) and a dependent variable ( $Y$ ). This analysis identifies the direction of the relationship (positive or negative) and predicts the dependent variable based on changes in the independent variables[8].

The multiple linear regression equation is expressed as:

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_n X_n \quad (1)$$

Description:

$Y$  = Dependent variable (predicted value)

$X_1$  and  $X_2$  = Independent variables

$a$  = Constant ( $Y'$  value when  $X_1, X_2, \dots, X_n = 0$ )

$b$  = Regression coefficient (increase or decrease value)

#### 2.1.2. Mean Absolute Percentage Error (MAPE)

Mean Absolute Percentage Error (MAPE) is a statistical measure used to evaluate the accuracy of forecasting results by calculating the average percentage of absolute errors. The MAPE value indicates the level of prediction error compared to the actual value, where a smaller MAPE represents higher forecasting accuracy[9].

$$\frac{1}{n} \sum \frac{|D_t - Y_{t1}|}{D_t} \times 100\% \quad (2)$$

Description:

$D_t$  = Actual value

$Y_{t1}$  = Predicted value

$n$  = Number of data

### 2.2. Research Stages

#### 2.2.1. Data Collection

Data collection is a crucial first step in any research. In this study, the author employed direct interviews to collect data. Interviews were conducted directly with CV. Berkah Farm Mandiri, the research object. The collected data included 100 duck sales data, each with a time stamp, from January 3, 2024, to October 18, 2024. The duck sales data at CV. Berkah Mandiri Farm are shown in Table 1.

Table 1. Duck Sales Data 2024

Date	Day Description	Price (Rp)	Sale (Kg)
03/01/2024	1	23500	30
04/01/2024	1	23500	30
05/01/2024	1	23500	30
06/01/2024	2	24500	25
13/01/2024	2	24500	20
...	...	...	...
08/10/2024	1	24000	45
10/10/2024	1	24000	41
13/10/2024	2	25000	33
14/10/2024	1	23500	40
18/10/2024	1	23500	40

#### 2.2.2. Prepare Data

Preparing data is a stage carried out to process sales data in Table 1 to become quality data for multiple linear regression analysis shown in Table 2.

Table 2. Sales Data

No	Date (x1)	Price (Rp)(x2)	Sale (y)
1	03/01/2024	23500	30
2	04/01/2024	23500	30
3	05/01/2024	23500	30
4	06/01/2024	24500	25
5	13/01/2024	24500	20

No	Date (x1)	Price (Rp)(x2)	Sale (y)
6	15/01/2024	23500	33
7	26/01/2024	23500	35
8	27/01/2024	24500	26
9	29/01/2024	23500	30
10	31/01/2024	23500	32
...	...	...	...
99	14/10/2024	23500	40
100	18/10/2024	23500	40

### 2.2.3. Pre-Processing

Pre-processing, or pre-processing, is the activity of converting raw data into a form that is easier to understand in certain calculations. For this data, several stages are carried out, namely removing empty values by replacing them with the average, median, or deleting the row; removing unnecessary formats such as dates and numbers; transforming variables in the date column by grouping holidays or weekends (Saturday and Sunday) into "2" and weekdays (Monday-Friday) into "1"; and finally formatting the dataset to obtain sales data that has gone through the process, as shown in Table 3.

Table 3. Pre-processing

Date (x1)	Price(Rp)(x2)	Sale (y)
1	23500	30
1	23500	30
1	23500	30
2	24500	25
2	24500	20
1	23500	33
1	23500	35
2	24500	26
1	23500	30
1	23500	32
...	...	...
1	23500	40
1	23500	40

### 2.2.4. Dataset

After the data preparation process is complete, the dataset stage is continued, where the data is prepared for the calculation process. Table 3.4 displays the data ready for prediction calculations. All variables are converted to numeric format so they can be processed by the linear regression algorithm. The input (independent) variables x1 and x2 and the target (dependent) variable y are prepared.

Table 3. Dataset

x1	X2	y
1	23500	30
1	23500	30
1	23500	30
2	24500	25
2	24500	20
1	23500	33
1	23500	35
2	24500	26
1	23500	30
1	23500	32
...	...	...
1	23500	40
1	23500	40

**2.2.5. Multiple Linear Regression Calculation**

1. Calculate the regression coefficient values, namely  $\beta_0, \beta_1, \beta_2$ , using the normal matrix method, and the following values are produced :

$$A = \begin{bmatrix} 100 & 129 & 2414500 \\ 129 & 187 & 601500 \\ 2414500 & 3135000 & 58323250000 \end{bmatrix}$$

2. Prepare the matrix H to help in finding  $\beta$ .

$$H = \begin{bmatrix} 3654 \\ 4527 \\ 88142000 \end{bmatrix}$$

3. Matrix H is input into one row of matrix columns, such as in  $A_1$  where from Matrix A, the first row of columns is replaced with the values from Matrix H, and this is done until Matrix  $A_4$

$$A_1 = \begin{bmatrix} 3654 & 129 & 2414500 \\ 4527 & 187 & 601500 \\ 88142000 & 3135000 & 58323250000 \end{bmatrix}$$

$$A_2 = \begin{bmatrix} 100 & 3654 & 2414500 \\ 129 & 4527 & 601500 \\ 2414500 & 88142000 & 58323250000 \end{bmatrix}$$

$$A_3 = \begin{bmatrix} 100 & 129 & 3654 \\ 129 & 187 & 4527 \\ 2414500 & 3135000 & 88142000 \end{bmatrix}$$

4. Calculate the Determinant value of each Matrix, the following results are obtained

DetA = 10590000000  
 DetA<sub>1</sub> = -4206176750000  
 DetA<sub>2</sub> = -299270250000  
 DetA<sub>3</sub> = 206220500

5. Calculate the value of  $\beta$

$$\begin{aligned} \widehat{\beta}_0 &= \frac{Det A_1}{Det A} = \frac{-4206176750000}{10590000000} = -397,1838291 \\ \widehat{\beta}_1 &= \frac{Det A_2}{Det A} = \frac{-299270250000}{10590000000} = -28,25970255 \\ \widehat{\beta}_2 &= \frac{Det A_3}{Det A} = \frac{206220500}{10590000000} = 0,019473135 \end{aligned}$$

6. Calculate the linear regression equation

$$\gamma = \beta_0 + b_1X_1 + b_2X_2$$

7. First Input Test

Date (x1) = 05/15/2025 (weekday) = 1  
 Price (x2) = 23500  
 Then

$$\begin{aligned} \gamma &= -397,1838291 + (-28,25970255 \times 1) + (0,019473135 \times 23500) \\ \gamma &= -397,1838291 + (-28,25970255) + (457,6186725) \\ \gamma &= 32,17 \end{aligned}$$

Obtained when predicting the date of May 15, 2025 with the information of weekday or normal day and when the price of meat per kilo is IDR 23,500, the predicted demand figure is 32.17 kg.

8. Second Input Test

Date (x1) = 05/18/2025 (weekend) = 2  
 Price (x2) = 25000  
 Then

$$\begin{aligned} \gamma &= -397,1838291 + (-28,25970255 \times 2) + (0,019473135 \times 25000) \\ \gamma &= -397,1838291 + (-56,5194051) + (48,6828338) \\ \gamma &= 33,12 \end{aligned}$$

Obtained when predicting the date of May 18, 2025 with the description of a weekend or holiday and when the price of meat per kilo is IDR 25,000, the predicted demand figure is 33.12 kg.

**2.2.6. MAPE Accuracy Calculation**

Accuracy calculations using the Mean Absolute Percentage Error (MAPE) are performed to determine the accuracy of calculations based on existing sales data. Accuracy calculations require renormalization of the previous dataset.

Table 4. Accuracy Calculation

Sale (y)=(Dt)	Linear Regression (Ft)	(Dt-Ft)/Dt
30	32,17514164	0,072504721
30	32,1751	0,072504721

30	32,1751	0,072504721
25	23,3886	0,064457035
20	23,3886	0,169428706
33	32,1751	0,024995708
35	32,1751	0,080710239
26	23,3886	0,100439457
30	32,1751	0,072504721
32	32,1751	0,005473176
....	....	....
40	32,1751	0,195621459
40	32,1751	0,195621459
3654	3654	5,472679611

The sales column named (y) is changed to Dt, the Prediction Result column is given the name (Ft). After getting the error calculation results, this time calculate the MAPE accuracy.

$$MAPE = \frac{5,472679611}{100} = 0,054726796$$

The MAPE error value is 0.05472. Convert the numbering format to a percentage and invert the value to determine the percentage accuracy of the prediction.

$$MAPE = 0,05472 = 5,473\% = 94,53\%$$

The accuracy obtained from calculating duck meat sales data of 100 sales data based on day information and prices using the multiple linear regression method is 94.53%.

### 2.2.7. System Design

Process design is a key element in building an effective and efficient system. This process involves comprehensive design to ensure the system meets user needs and is well-integrated. This is accomplished through the creation of flowcharts and analysis of application flows to clearly and structuredly illustrate the process.

1. Flowchart

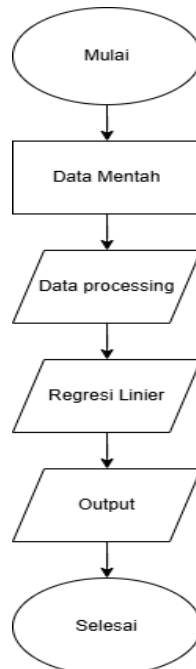


Fig. 1: Flowchart Linear Regression

flowchart of a sales prediction system using the linear regression method. The process begins at the Start stage, followed by the collection of raw data to be used as input. The data then enters the data processing stage, which prepares the data for use in calculations. After the data is processed, calculations are performed using the linear regression method to obtain a prediction model. The results of these calculations are displayed in the Output stage. Finally, the system flow ends at the Finish stage. This flowchart simply illustrates the main stages in a sales prediction system, from data input to generating predicted output.

2. Context Diagram

It is a diagram that uses notations to describe the flow of system data, the use of which is very helpful in understanding the system logically[10].

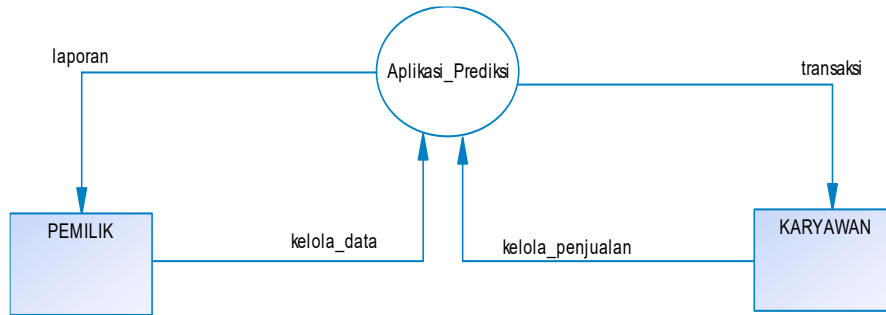


Fig. 2: Context Diagram

The image above shows the Level 0 Diagram of the Prediction Application, depicting the interaction between the Owner and the Employees. Employees enter sales, price, and seasonal data, which the system processes into prediction reports, while the Owner accesses the reports for evaluation. Employees also manage inventory data to ensure accurate predictions.

3. Data Flow Diagram

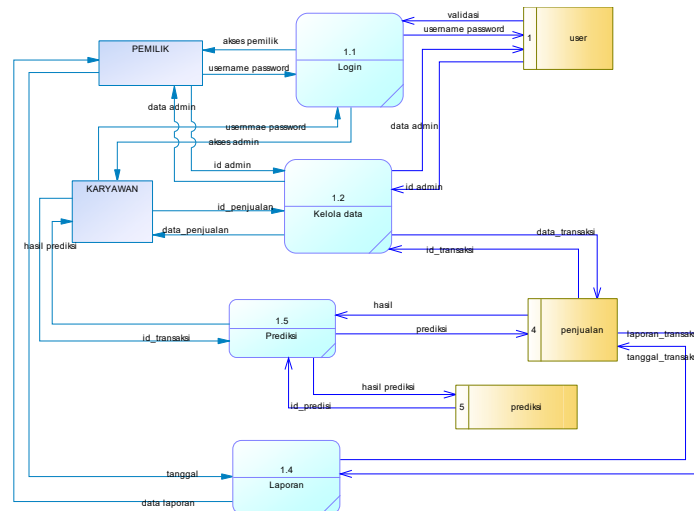


Fig. 3: Data Flow Diagram Level 1

This Level 1 DFD will discuss the Duck Meat Sales Prediction System at CV. Berkah Farm Mandiri Based on Monthly Sales Data Using the Web-Based Multiple Linear Regression Method which will be designed based on the context of this diagram. prediction system with two actors, Owner and Employee, and five main processes: Login, Manage Data, Transaction, Prediction, and Report. Employees manage item data and record sales, which are input for the prediction process. The owner then accesses the analysis results report to support business decisions.

4. CDM (Conceptual Data model)

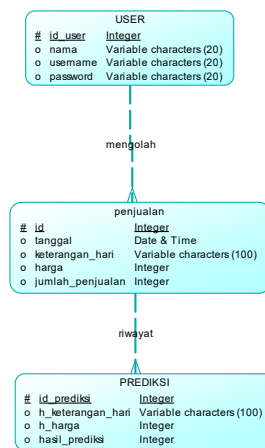


Fig. 4: Conceptual Data Model

Figure above is an ERD (Inter-Table Relationship Diagram) depicting the database structure of a sales forecasting system. It has three main tables: user, sales, and prediction. The user table stores user data such as user ID, name, username, and password. The sales table contains sales data such as date, day (weekday or weekend), price, and sales amount. The prediction table stores prediction results based on the input price and day information. The relationships between these tables indicate that sales data is entered by the user and then used in the prediction process. Overall, this structure explains how data flows from the user to the sales forecast in the system.

5. PDM (Physical Data Model)

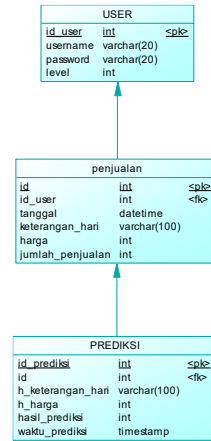


Fig. 5: Physical Data Model

Figure above is an ERD for a sales forecasting system consisting of three main tables: user, sales, and prediction. The user table stores user information such as user\_id, username, password, and level, which serves to differentiate between admin and employee. The sales table contains sales transaction data such as user\_id (relation to user), sales date, day description, price, and sales amount. Meanwhile, the prediction table stores sales prediction results based on input from day and price descriptions, with an additional attribute in the form of prediction\_time to record when the prediction is made. This relationship between tables shows that users input sales data, and that data is later used to make sales predictions using the linear regression method. This diagram illustrates the data flow from users to prediction results in the system.

### 3. system implementation

#### 3.1. login page

This page provides brief instructions for admins on how to log in to the system. Admins simply need to fill out the provided form with their username and password. Then, click the "Login" button to submit the data and access the admin page. This is the first step in gaining access to the system's features.

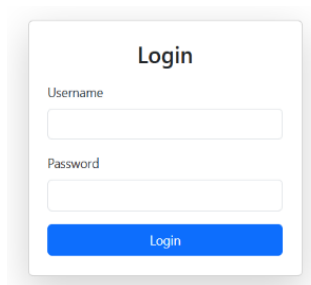


Fig. 6: Login Page

#### 3.2. Dashboard Page

This display is the dashboard page of CV. Berkah Farm Mandiri's information system. At the top of the page there is a blue header that displays the company name on the left side, namely "Berkah Farm Mandiri", and a navigation menu on the right side consisting of Dashboard, Data Input, Prediction Accuracy, Sales Prediction, and Logout. In the middle of the page is the title "Berkah Farm Mandiri Dashboard", accompanied by an image of a duck pen that shows the farm's activities. Below the image, there is a brief explanation of the company. CV. Berkah Farm Mandiri is a company engaged in duck farming and duck meat distribution. This company manages duck farms to produce meat that is later distributed to markets, restaurants, or directly to consumers.



Fig. 7: Dashboard Page

### 3.3. Manage Sales Data Page

The Sales Data Input page displays a form for entering data (date, day, price, and sales amount) with Save and Reset buttons. Below it, there's a table displaying sales data along with a delete button. This view makes it easy for users to add, view, and manage sales data for forecasting.

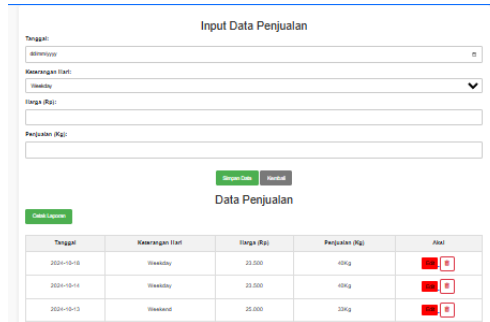


Fig. 8: Data Input Page

### 3.4. Sales Forecast Page

This page inputs meat sales predictions with several input variables as benchmarks, then there is a Prediction button where the calculation process is carried out to the results page, there is a back button if the prediction is not carried out which goes to the dashboard page.



Fig. 9: Prediction Input Page

The above page shows the sales prediction page and shows the input process and prediction results based on linear regression. On the home page, the user fills out a form by selecting the day information (such as Weekday or Weekend), entering the price of duck meat in Rupiah, After the data is filled in and clicked predict, the system then displays the results of the regression calculation based on the input provided, including information on the day, price, that has been selected. In addition, there is a Sales Data table that contains historical data with columns Description of Day (x1), Price (x2), and Sales Amount (y), which are used as the basis for generating predictions for the number of duck meat sales.

Hasil Perhitungan Regresi dari :

Hari	2025-05-20
Harga	Rp 25.000

Data Penjualan

Tanggal (x1)	Harga (x2)	Jumlah Penjualan (y)
2024-01-03	23.500,00	30
2024-01-04	23.500,00	30
2024-01-05	23.500,00	30
2024-01-06	24.500,00	25
2024-01-13	24.500,00	20
2024-01-15	23.500,00	33

Berikut hasil perjumlahan dari setiap variabel input dan kombinasi antar variabel yang digunakan untuk perhitungan regresi linear berganda.

$$n = 100$$

$$\sum x_1 = 129$$

$$\sum x_2 = 2414500$$

$$\sum y = 3654$$

$$\sum x_1^2 = 187$$

$$\sum x_2^2 = 58323250000$$

$$\sum x_1 x_2 = 3135000$$

$$\sum x_1 y = 4527$$

$$\sum x_2 y = 88142000$$

berikut hasil perhitungan regresi :

Matrik A

$$A = \begin{bmatrix} 100 & 129 & 2414500 \\ 129 & 187 & 3135000 \\ 2414500 & 3135000 & 58323250000 \end{bmatrix}$$

Matrik H

$$H = \begin{bmatrix} 3654 \\ 4527 \\ 88142000 \end{bmatrix}$$

Matrik A1

$$A_1 = \begin{bmatrix} 3654 & 129 & 2414500 \\ 4527 & 187 & 3135000 \\ 88142000 & 3135000 & 58323250000 \end{bmatrix}$$

Matrik A2

$$A_2 = \begin{bmatrix} 100 & 3654 & 2414500 \\ 129 & 4527 & 3135000 \\ 2414500 & 88142000 & 58323250000 \end{bmatrix}$$

Matrik A3

$$A_3 = \begin{bmatrix} 100 & 129 & 3654 \\ 129 & 187 & 4527 \\ 2414500 & 3135000 & 88142000 \end{bmatrix}$$

determinant

Det(A) = 18950000000  
 Det(A1) = -4206176750000  
 Det(A2) = -299270250000  
 Det(A3) = 288228598

Koefisien Regresi

$$b_0 = \frac{\det(A_1)}{\det(A)} = \frac{-4206176750000}{10590000000} = -397,18383$$

$$b_1 = \frac{\det(A_2)}{\det(A)} = \frac{-299270250000}{10590000000} = -28,2597$$

$$b_2 = \frac{\det(A_3)}{\det(A)} = \frac{206220500}{10590000000} = 0,01947$$

Persamaan Regresi

$$\hat{y} = b_0 + b_1 x_1 + b_2 x_2 = -397,18383 + (-28,2597 x_1) + 0,01947 x_2$$

Perhitungan Prediksi

$$x_1 = 1, \quad x_2 = 25000$$

$$\hat{y} = -397,18383 + (-28,2597 \times 1) + (0,01947 \times 25000)$$

$$\hat{y} = 61,38484 \text{ Kg}$$

Jadi Hasilnya penjualan daging selanjutnya adalah 61 Kg

Fig. 10: Sales Forecast and Prediction Results

### 3.5. Prediction Accuracy Page

The following prediction accuracy page contains information on the date, input variables (Day Description), Price, actual sales volume, predicted results, and accuracy values. This table is used to compare the predicted results with actual duck meat sales data to measure the accuracy of the prediction model used.

No	Tanggal(x1)	Harga (x2)	Jumlah Penjualan (y)	Hasil Prediksi	MAPE (%)
1	2024-10-18	23.500,00	40	32	0.19562145892351
2	2024-10-14	23.500,00	40	32	0.19562145892351
3	2024-10-13	25.000,00	33	33	0.003792171001802
4	2024-10-10	24.000,00	41	42	0.022236808770354
5	2024-10-08	24.000,00	45	42	0.068628685342566
6	2024-09-22	25.000,00	30	33	0.10417138810198
7	2024-09-21	25.000,00	35	33	0.053567381626872
8	2024-09-19	24.000,00	45	42	0.068628685342566
9	2024-09-17	24.000,00	44	42	0.047461155463988
10	2024-09-14	25.000,00	35	33	0.053567381626872
11	2024-09-12	24.000,00	44	42	0.047461155463988
12	2024-09-10	24.000,00	40	42	0.047792728898613
13	2024-09-09	24.000,00	41	42	0.022236808770354
14	2024-09-08	25.000,00	30	33	0.10417138810198
15	2024-09-07	25.000,00	35	33	0.053567381626872
16	2024-09-06	24.000,00	45	42	0.068628685342566
17	2024-09-05	24.000,00	42	42	0.0021021628670353

Fig. 10: Prediction Input Page

### 3.6. Print Report Function Page

This page displays the Sales Data page, which contains a table of sales transaction records. At the top, there's a green Print Report button, which prints the sales data in report format. The table below contains several columns: transaction date, day (weekday or weekend), price per kilogram in rupiah, and total sales in kilograms.

Data Penjualan

Cetak Laporan

Tanggal	Keterangan Hari	Harga (Rp)	Penjualan (Kg)	Aksi
2024-10-18	Weekday	23.500	40Kg	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">Edit</span>
2024-10-14	Weekday	23.500	40Kg	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">Edit</span>
2024-10-13	Weekend	25.000	33Kg	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">Edit</span>
2024-10-10	Weekday	24.000	41Kg	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">Edit</span>

Fig. 11: Print Report button

The image below shows this print feature, which allows users to select the sales data they wish to print from a provided table. The table displays information such as the date, day of the week, price, and sales amount, along with checkboxes for selecting specific rows of data.

Pilih Data yang Ingin Dicitak

Pilih	Tanggal	Keterangan Hari	Harga (Rp)	Penjualan (Kg)
<input checked="" type="checkbox"/>	2024-10-18	Weekday	23.500	40 Kg
<input checked="" type="checkbox"/>	2024-10-14	Weekday	23.500	40 Kg
<input checked="" type="checkbox"/>	2024-10-13	Weekend	25.000	33 Kg
<input checked="" type="checkbox"/>	2024-10-10	Weekday	24.000	41 Kg
<input type="checkbox"/>	2024-10-08	Weekday	24.000	45 Kg
<input type="checkbox"/>	2024-09-22	Weekend	25.000	30 Kg
<input type="checkbox"/>	2024-09-21	Weekend	25.000	35 Kg
<input type="checkbox"/>	2024-09-19	Weekday	24.000	45 Kg
<input type="checkbox"/>	2024-09-17	Weekday	24.000	44 Kg
<input type="checkbox"/>	2024-09-14	Weekend	25.000	35 Kg

Fig. 12: Print Report Page

The image below shows that after the user selects the desired data and confirms printing, the system will generate a PDF file containing a neat and structured sales data report according to the user's selection.

Tanggal	Hari	Harga (Rp)	Penjualan (Kg)
2024-10-18	Weekday	23.500	40 Kg
2024-10-14	Weekday	23.500	40 Kg
2024-10-13	Weekend	25.000	33 Kg
2024-10-10	Weekday	24.000	41 Kg

Fig. 13: Output Print Report

## 4. Conclusion

Ducks are a type of poultry that is quite popular in Indonesia and is often raised as livestock. Scientifically, ducks belong to the Anatidae family with the Latin name *Anas Platyrhynchos Domesticus*. Based on the background that has been described, it can be concluded that CV Berkah Farm Mandiri, as a meat duck farming business, faces challenges in estimating fluctuating sales figures every month. Therefore, an accurate sales prediction system is needed to support efficient production and stock planning. The purpose of this study is to develop a web-based duck meat sales prediction system using the multiple linear regression method, analyze the level of prediction accuracy using the MAPE method, and identify the main factors that influence sales such as price, day, and season. This system was built using historical sales data which was then analyzed through multiple linear regression calculations. The test results showed that the system was able to provide predictions with an accuracy level of 94.53%, which means it is classified as very accurate. With this system, business managers can more easily and precisely make decisions regarding the amount of stock that must be prepared, as well as reduce the risk of losses due to excess or insufficient supply.

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## References

- [1] N. A. Nugroho, A. Sanjaya, and D. W. Widodo, "Pemilihan Bibit Bebek Pedaging Menggunakan Sistem Komputerisasi Menggunakan Metode SAW," *Semin. Nas. Inov. Teknol. UN PGRI Kediri*, pp. 27–32, 2022.
- [2] S. Mujilawati and L. D. Windasari, "Implementasi Metode k-Nearest Neighbor (k-NN) untuk Memprediksi Penjualan Buah di Indonesia berbasis Website," *Semin. Nas. Teknol. Sains*, vol. 3, no. 1, pp. 7–14, 2024, doi: 10.29407/stains.v3i1.4077.
- [3] H. N. Anthony Anggrawan, "Prediksi Penjualan Produk Unilever Menggunakan Metode Regresi Linear," *J. Bumigora Inf. Technol.*, vol. BITE, pp. 123–132, 2022.
- [4] D. F. Ghebyla Najla Ayuni, "Penerapan Metode Regresi Linear Untuk Prediksi Penjualan Properti pada PT XYZ," *J. Telemat.*, vol. 14, no. 2, pp. 79–86, 2020.
- [5] A. I. Akbar Muharram, *Prediksi Jumlah Produksi Daging Unggas Tahun 2023-2027*. JATI, 2023.
- [6] R. M. Davila Erdianita, "Sistem Prediksi Penjualan Menggunakan Metode Weighted Moving Average Dan Economic Order Quantity Pada Toko Mariah," *JIP (Jurnal Inform. Polinema)*, vol. 9, no. 4, pp. 363–394, 2023.
- [7] L. D. Melany Mustika Dewi, "Regresi Linier Untuk Prediksi Konsumsi Dan Produksi Daging Unggas," *J. Inf. Syst. Manag. (JOISM)*, vol. 4, no. 2, pp. 81–85, 2023.
- [8] R. L. Berganda, "Menggunakan Metode Regresi Linier Berganda," pp. 1–12.
- [9] N. H. Pajriati, E. Kurniati, and D. Suhaedi, "Penerapan Metode Average Based Fuzzy Time Series Lee Untuk Peramalan Harga Emas Di PT. X," *J. Ris. Mat.*, vol. 1, no. 1, pp. 73–81, 2021, doi: 10.29313/jrm.v1i1.221.
- [10] P. S. I. Pratiwi, Mg. Rohman, and M. Sholihin, "Sistem Pakar Penyakit Telinga Menggunakan Metode Naive Bayes," *Gener. J.*, vol. 7, no. 2, pp. 70–82, 2023, doi: 10.29407/gj.v7i2.19991.