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PROFIT PREDICTION USING MULTIPLE LINEAR REGRESSION METHODS PYTHON PROGRAMMING LANGUAGE AT PT. TRI ERDNOV REZEKI

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Abstract

PT. Tri Erdnov Rezeki is a national private company founded in 2016 and fully under the leadership and ownership of Indonesian entrepreneurs. PT. Tri Erdnov Rezeki is also engaged in Construction Development Planning and Repair and Maintenance of Steam Aircraft and Pressure Vessels, Supply of Technical Equipment, Industrial Work Equipment, Electrical Equipment, and Machinery, especially in the Palm Oil Plantation and Power Plant Sectors. In carrying out a project, the company does not only carry out technical design but also must carry out the economic design so that the company can determine the economic feasibility of a project. However, companies often experience cost calculation errors. Data science can be utilized to predict the value achieved in a period using previous data. Data science will analyze patterns related to data with other data to produce a reference or a formula that can be used as a value prediction in the future. So, the author will use the multiple linear regression method using the Python programming language, which functions to perform statistical analysis, namely predicting profits in a project. The analysis results in this study show that the profit variable is influenced by 99.7% by the variables material cost, labor cost, and utility cost. In comparison, other variables outside the study influence the other 0.3%. The material cost variable has the most significant influence, where the value is below 0 .05 compared to the variable labor cost and utility cost to the profit variable. The average percentage of Python prediction errors is 0.97%, where the average percentage of Python prediction errors is smaller than the average percentage of SPSS prediction errors which is 2.04%.

Keywords: ***Prediction, Data Science, Profit, Percentage Error, and Significance***

1. INTRODUCTION

PT. Tri Erdnov Rezeki is a national private company founded in 2016 and fully under the leadership and ownership of Indonesian entrepreneurs. PT. Tri Erdnov Rezeki is also engaged in Construction Development Planning and Repair and Maintenance of Steam Aircraft and Pressure Vessels, Supply of Technical Equipment, Industrial Work Equipment, Electrical Equipment, and Machinery, especially in the Palm Oil Plantation and Power Plant Sectors (PT. TER 2018). PT. Tri Erdnov Rezeki was originally a National Private Company intended as a Supplier Service Company. In its development, PT. Tri Erdnov Rezeki expanded his business activity, covering three service areas: Generaleral Contractor, Boiler, and Design / Modification (PT.TER, 2018).

PT. Tri Erdnov Rezeki, a service provider, requires planning before taking on a project so that companies can consider the effectiveness of work and efficiency in carrying out a service project. Careful planning will give the best results to consumers. In carrying out a project, the company does more than carry out technical designs. However, it must carry out economic designs so that the company can determine the economic feasibility of a project (PT.TER 2018). However, companies often experience cost calculation errors, so a data science system utilization is needed that can predict the economic feasibility of a project.

The utilization can be used to predict the value achieved in a period using previous data. Data science will analyze patterns related to data with other data to produce a reference or a formula that can be used as a value prediction in the future (Kumar et al., 2020).
Simple linear regression analysis is used to develop an equation that shows the relationship between the independent variables and the dependent variable and to predict the value of the dependent variable if the independent variable increases or decreases. It can be done using Python programming (Tran et al., 2021). Data science predictions using the Python programming language are expected to solve problems at PT. Tri Erdnov Rezeki often experiences errors in predicting a project's benefits, which can also be a solution for PT. Tri Erdnov Rezeki for quick calculations of project profits. In this study, the authors will use the multiple linear regression method using the Python programming language to generate project profit equations based on the correlation between data to predict project profits that PT. Tri Erdnov Fortune will carry out.

Data Mining

Data mining is an analytical step towards discovering knowledge in databases or knowledge discovery in databases, abbreviated as KDD. Knowledge can be in the form of data patterns or relationships between valid data that were not previously known. Data mining combines several computer science disciplines defined as discovering new patterns from large data sets, including methods of artificial intelligence, machine learning, statistics, and database systems (Ferré, 2020). Data mining is intended to extract (take the essence) of knowledge from a set of data so that a structure that is understandable to humans is obtained and includes database and data management, data processing, model considerations and inference, interest measures, complexity considerations, post-processing of the structures found, visualization, and online updating (Winarti, 2023). Data mining can be used for predictive purposes (e.g., classification, regression, bias/anomaly detection, etc.), using some existing variables to predict the future value of other variables (Eziama, 2021). Predictive methods in data mining are regularities, patterns, and relationships in large data sets and should be known in advance. The predictive method concludes existing data to make predictions on further data. Classification, regression, and deviation are predictive methods techniques (Ghavami, 2019).

Python Programming Language

Since appearing 1991 in the public domain, this programming language has developed with the support of a community of users and developers, such as the *Python Software Activity, internet newsgroup comp.lang.python*, and other informal organizations. This programming language is becoming commonly used by engineers worldwide in making their software, and even some companies use Python as a commercial software maker (Lutz, 2010). Python is a programming language that is freeware or freeware in the truest sense of the word. There are no restrictions on copying or distributing it. Complete with source code, debugger, and profiler. The interface contained interface services, system functions, GUI (graphical user interface), and a database. Python can be used on several operating systems, such as most UNIX systems, PCs (DOS, Windows, OS/2), Macintosh, and others. In most Linux operating systems, this programming language is standardized to be included in the distribution package (Lutz, 2001). Python is a multipurpose interpretive programming language with a design philosophy focusing on code readability. Python is claimed to be a language that combines capabilities, capabilities, with very clear code syntax and is equipped with a large and comprehensive standard library functionality. Python is a general-purpose programming language developed to make source code easy to read (Martelli, 2023).

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2. IMPLEMENTATION METHOD

The authors used a quantitative approach in this study because the research data was in numbers and used statistical analysis. In this study, the authors collected research data in the form of a project budget plan, where the research data consisted of 30 budget plans, then presented the results of implementing a profit prediction system using multiple linear regression based on the Python programming language, prepared libraries and data, determined x and y variables, preparing training data and test data, the correlation between data, regression stats models, coefficient of determination, percentage error of regression results, and comparison of analysis results.

3. RESULTS AND DISCUSSION

Research Data

In this study, the authors collected research data in the form of project budget designs, where the research data consisted of 30 budget designs. The budget design data can be seen in Table 1 below.

Table 1. Research Data

Project	Material Cost (X1)	Labor Cost (X2)	Utility Cost (X3)	Profit (Y)
1	147.078.282	64.723.723	20.182.666	26.678.237
2	76.924.723	33.802.101	10.951.005	12.167.783
3	300.015.136	121.519.278	39.814.403	59.975.346
4	26.623.468	11.535.430	4.033.603	4.641.175
5	256.659.273	107.169.426	32.801.301	49.578.750
6	5.897.467.052	2.330.127.444	679.620.505	1.113.401.875
7	482.450.676	203.871.415	63.756.697	75.007.879
8	638.143.200	285.405.300	87.451.500	111.210.000
9	394.845.919	166.363.873	52.000.208	70.519.150
10	522.874.737	221.358.337	58.953.926	100.398.375
11	656.226.200	274.100.400	91.673.400	132.860.000
12	194.790.504	84.712.630	23.908.866	36.409.440
13	415.377.370	183.882.215	51.190.415	87.810.750
14	499.735.114	220.008.678	62.926.708	86.093.755
15	80.982.387	34.762.374	9.887.238	16.960.320
16	118.629.674	50.652.958	16.395.367	23.209.750
17	150.246.600	62.817.720	19.335.680	27.888.000
18	409.765.594	184.891.853	55.454.554	74.762.880
19	49.957.400	22.223.350	6.319.250	9.420.000
20	176.387.923	75.921.461	23.167.616	33.057.240
21	990.939.326	418.437.688	131.262.485	192.579.938
22	221.703.622	92.679.383	28.492.996	44.573.880
23	567.600.029	239.801.371	69.065.600	105.176.040
24	344.527.479	149.839.194	45.983.828	70.245.565
25	31.709.760	13.636.380	3.953.860	5.916.000

26	530.922.116	234.498.262	70.282.622	112.819.905
27	319.155.771	135.863.910	42.650.319	64.697.100
28	80.809.303	35.130.075	10.701.122	15.196.860
29	239.379.125	102.612.595	34.983.280	47.121.875
30	50.382.600	. 21.434.220	6.783.180	7.860.000

Based on Table 1 above, three independent variables are denoted as variable x, and one dependent variable or denoted as variable y.

System Implementation

In this study, the authors will present the results of implementing a profit prediction system using multiple linear regression based on Python programming. The stages of designing a profit prediction system using the Python programming language can be seen in the following elaboration.

Setting Up Libraries and Data

The first step that must be taken to design a profit prediction system with Python is first to prepare libraries and research data in csv format. The preparation of the library and research data can be seen in Figure 1 below.

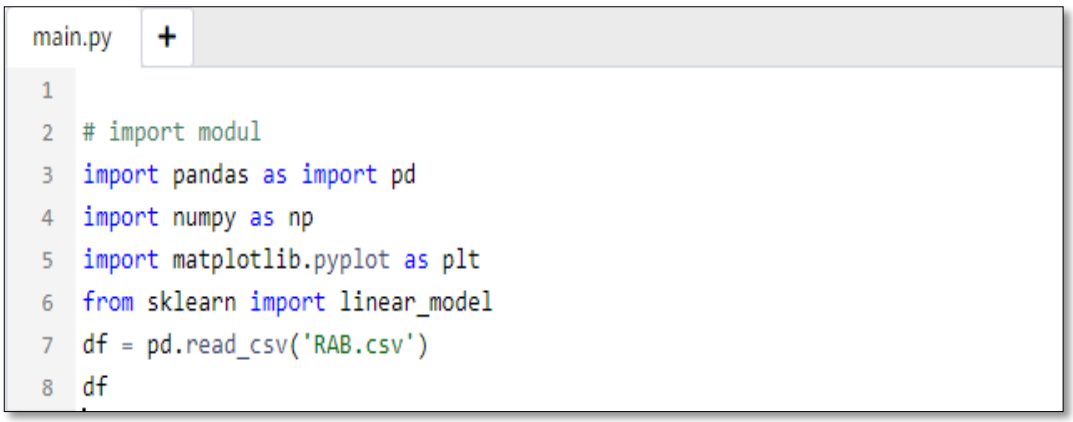

Figure 1. Library and Data Setup

Determine the X and Y Variables

At this study stage, the writer will determine the x and y variables, where the x variable is an independent variable that can affect the y variable. The y variable is a variable that is influenced by the y variable, so in designing a profit prediction system using Python, the writer must declare the variable x and y variables. The determination of the x and y variables can be seen in Figure 2 below.

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```
reg = linear_model.LinearRegression()
reg.fit(df[['material cost','labour cost','utility cost']], df.profit)
LinearRegression()

#mendefinisikan nilai x dan y
x = df.drop(['profit'],axis=1).values
y = df['profit'].values
```

Figure 2. Determination of X and Y Variables

Prepare training data and test data.

In this study, the authors will conduct training and test data on research data so that it can be analyzed by Python software. The data in the study are around 30 project budget designs. The preparation of training and test data can be seen in Figure 3 below.

```
#split dataset pada traning set dan test set
from sklearn.model_selection import train_test_split
x_train, x_test,y_train,y_test = traint_test_split (x,y,test_size=0.33,random_state=0)
```

Figure 3. Preparation of Training Data and Test Data

Correlation Between Data

In this study, the writer will show the correlation between data processed by Python so that the writer can use variable results as a benchmark for profit prediction. The correlation between data can be seen in Figure 4 below.

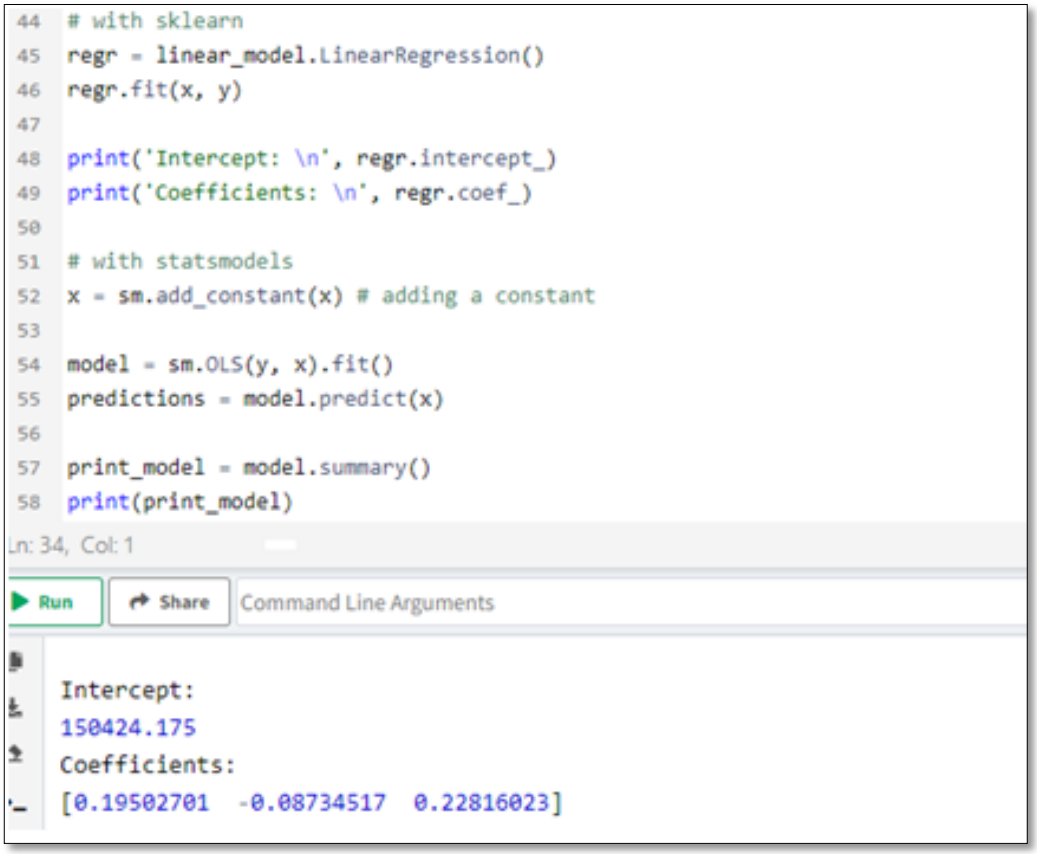

Figure 4. Correlation Between Data

Stats models Regression Results

In this study, the authors will calculate the results of multiple linear regression by entering the dependent variable into the equation. The results of the Python stats models regression can be seen in Figure 5 below.

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OLS Regression Results

Dep. Variable	y	R-squared:	0.997
Model:	OLS	Adj. R-squared:	0.997
Method:	Least Squares	F-statistic:	11344.031
Date:	Fri, 02 Jun 2023	Prob (F-statistic):	0.00
Time:	06:43:40	Log-Likelihood:	0.00
No. Observations:	29	AIC:	0.00
Df Residuals:	26	BIC:	0.00
Df Model:	6		
Covariance Type:	Nonrobust		

	coef	Std err	t
Const	150424.175	1727524.345	0.089
X1	195	0.049	4.026
X2	-0.087	0.176	-0.499
X3	0.228	0.340	0.680

Figure 5. Stats models Python Regression Results

The calculation of the results of multiple linear regression with three independent variables can be seen in the following equation.

Y = 150.424,175 + 0.195(X1) - 0.087(X2) + 0.228(X3)

Information:
Y = Profit
X1 = Material_Cost
X2 = Labor_Cost
X3 = Utility_Cost
Variable y is profit in a project planning, and there are constants or provisions, variable x1 is material cost, variable x2 is labor cost, and variable x3 is utility cost.

Multiple Linear Regression Validation With SPSS

In this study, the authors will validate the results of multiple linear regression with SPSS software. SPSS validation is a reference for the truth in the profit prediction system. The validation of multiple linear regression with SPSS can be seen in the following elaboration.

SPSS Multiple Linear Regression Results

In this study, hypothesis testing was carried out using multiple linear regression analysis. Multiple linear regression analysis is used to analyze the effect of several independent variables on the dependent variable. The results obtained can be seen in Table 2 below:

Table 2. Multiple Linear Regression Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	154103.504	1727524.345		.089	.930
	Material_Cost	.197	.049	1.042	4.026	.000
	Labour_Cost	-.088	.176	-.184	-.499	.622
	Utility_Cost	.231	.340	.141	.680	.503

a. Dependent Variable: Profit

Based on Table 2 above, it can be concluded that the multiple linear regression equation is as follows:

Y = 154.103,504 + 0.197X1 - 0.088X2 + 0.231X3 + e

Information:
Y = Profit
X1 = Material_Cost
X2 = Labor_Cost
X3 = Utility_Cost
e = errors

The multiple linear regression equation above it can be interpreted as follows:

1. A constant value of 154,103.504 states that if the use variable Material_Cost, Labor_Cost, Utility_Cost has a value equal to zero (0), the dependent variable profit is 154,103.504.
2. The regression coefficient for using social media is 0.197. It has a positive sign, which means that if the Material_Cost variable increases by 1 unit, the dependent variable, namely profit, will also increase by 0.197 and vice versa.
3. The Labor_Cost regression coefficient is 0.088 and is negative, which means that if the Labor_Cost variable decreases by 1 unit, the dependent variable, namely profit, will also decrease by 0.088 and vice versa.
4. The value of the Utility_Cost regression coefficient is 0.231. It is positive, which means that if the Utility_Cost variable increases by 1 unit, the dependent variable, namely profit, will also increase by 0.231 and vice versa.

SPSS Determination Coefficient Test

The Coefficient of Determination test measures the model's ability to explain variations in the dependent variable. If the value of R2 is small, it means that the ability of the independent variable to explain the variation in the dependent variable is very limited. The weakness of using R2 is the bias toward the number of independent variables included in the model. Therefore, it is recommended to use the Adjusted R2 value to evaluate which regression model is the best. The results of the test for the coefficient of determination can be seen in Table 3 below.

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Table 3. Test Results for the Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	.999	.999	5764942.787

a. Predictors: (Constant), Utility_Cost, Material_Cost, Labour_Cost

The Adjusted R square (R2) is 0.999 based on the table above. This value indicates that the dependent variable Profit is affected by 99% by Utility_Cost, Material_Cost, and Labor_Cost. At the same time, the remaining 1% is influenced by other variables outside of this study.

Analysis of Multiple Linear Regression Results

In this study, the authors will analyze the results of multiple linear regression to predict profits using Python software and SPSS software. The analysis of multiple linear regression results using Python and SPSS can be seen in the following elaboration.

Regression Result Equation Test

The equation test of multiple linear regression results using the Python programming language and using SPSS can be seen in the following elaboration.

1. **Python**

Y = 150,424.175 + 0.195(X1) - 0.087(X2) + 0.228(X3)
Y = 150,424.175 + 0.195(147,078,282) - 0,087(64,723,723)
+ 0.228(20.182.666)
Y = 27,801,373.112

In this study, the authors will use Python to summarize the results of multiple linear regression equation tests. The tabulation of the results of the multiple linear regression equation test using Python can be seen in Table 4 below.

Table 4. Tabulation of Python Equation Test Results

Project	Material Cost (X1)	Labor Cost (X2)	Utility Cost (X3)	Profit (Y) Python
1	147.078.282	64.723.723	20.182.666	27.801.373,112
2	76.924.723	33.802.101	10.951.005	14.706.791,513
3	300.015.136	121.519.278	39.814.403	57.158.882,393
4	26.623.468	11.535.430	4.033.603	5.258.079,509
5	256.659.273	107.169.426	32.801.301	48.353.938,976
6	5.897.467.052	2.330.127.444	679.620.505	1.102.388.886,827
7	482.450.676	203.871.415	63.756.697	91.028.019,806
8	638.143.200	285.405.300	87.451.500	119.697.029,075
9	394.845.919	166.363.873	52.000.208	74.527.768,853
10	522.874.737	221.358.337	58.953.926	96.294.317,699
11	656.226.200	274.100.400	91.673.400	125.169.333,575
12	194.790.504	84.712.630	23.908.866	36.215.795,093

13	415.377.370	183.882.215	51.190.415	76.822.673,240
14	499.735.114	220.008.678	62.926.708	92.805.305,843
15	80.982.387	34.762.374	9.887.238	15.171.953,366
16	118.629.674	50.652.958	16.395.367	22.614.546,935
17	150.246.600	62.817.720	19.335.680	28.391.904,575
18	409.765.594	184.891.853	55.454.554	76.612.762,106
19	49.957.400	22.223.350	6.319.250	9.399.474,725
20	176.387.923	75.921.461	23.167.616	33.223.118,501
21	990.939.326	418.437.688	131.262.485	186.907.360,469
22	221.703.622	92.679.383	28.492.996	41.815.927,232
23	567.600.029	239.801.371	69.065.600	105.716.667,353
24	344.527.479	149.839.194	45.983.828	64.781.585,486
25	31.709.760	13.636.380	3.953.860	6.048.942,395
26	530.922.116	234.498.262	70.282.622	99.303.325,817
27	319.155.771	135.863.910	42.650.319	60.289.912,082
28	80.809.303	35.130.075	10.701.122	15.291.777,551
29	239.379.125	102.612.595	34.983.280	45.878.245,625
30	50.382.600	. 21.434.220	6.783.180	9.656.819,075

SPSS

Y = 154.103,504 + 0.197(X1) - 0.088(X2) + 0.231(X3)
Y = 154.103,504 + 0.197 (147.078.282) - 0.088(64.723.723)
+ 0.231(20.182.666)
Y = 28.095.033,28

In this study, the authors will summarize the results of multiple linear regression equation tests using SPSS. The tabulation of the results of the multiple linear regression equation test using SPSS can be seen in Table 5 below.

Table 5. Tabulation of SPSS Equation Test Results

Project	Material Cost (X1)	Labor Cost (X2)	Utility Cost (X3)	Profit (Y) Python
1	147.078.282	64.723.723	20.182.666	28.095.033,280
2	76.924.723	33.802.101	10.951.005	14.863.371,202
3	300.015.136	121.519.278	39.814.403	57.760.515,925
4	26.623.468	11.535.430	4.033.603	5.315.571,153
5	256.659.273	107.169.426	32.801.301	48.862.171,328
6	5.897.467.052	2.330.127.444	679.620.505	1.113.896.234,331
7	482.450.676	203.871.415	63.756.697	91.983.999,163
8	638.143.200	285.405.300	87.451.500	120.953.944,004
9	394.845.919	166.363.873	52.000.208	75.310.776,771
10	522.874.737	221.358.337	58.953.926	97.299.249,943
11	656.226.200	274.100.400	91.673.400	126.486.385,104
12	194.790.504	84.712.630	23.908.866	36.596.069,398
13	415.377.370	183.882.215	51.190.415	77.626.796,339
14	499.735.114	220.008.678	62.926.708	93.777.226,846

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15	80.982.387	34.762.374	9.887.238	15.332.496,809
16	118.629.674	50.652.958	16.395.367	22.854.018,755
17	150.246.600	62.817.720	19.335.680	28.691.266,424
18	409.765.594	184.891.853	55.454.554	77.417.444,432
19	49.957.400	22.223.350	6.319.250	9.499.803,254
20	176.387.923	75.921.461	23.167.616	33.573.155,063
21	990.939.326	418.437.688	131.262.485	188.868.268,217
22	221.703.622	92.679.383	28.492.996	42.255.813,410
23	567.600.029	239.801.371	69.065.600	106.822.942,169
24	344.527.479	149.839.194	45.983.828	65.462.432,063
25	31.709.760	13.636.380	3.953.860	6.114.266,444
26	530.922.116	234.498.262	70.282.622	100.345.198,982
27	319.155.771	135.863.910	42.650.319	60.923.990,000
28	80.809.303	35.130.075	10.701.122	15.454.048,777
29	239.379.125	102.612.595	34.983.280	46.363.020,449
30	50.382.600	. 21.434.220	6.783.180	9.760.178,924

Percentage of Regression Error Results

In this study, the authors will calculate the percentage error results of multiple linear regression, which compares the profit value of Python and SPSS with the actual profit value. The percentage of error can be calculated using the following equation.

$$\text{Error (\%)} = \frac{\text{(Y)Python, SPSS-(Y)Actual}}{\text{(Y)Python, SPSS}} \times 100\%$$

- Python

$$\text{Error (\%)} = \frac{\text{(Y)Python-(Y)Actual}}{\text{(Y)Python}} \times 100\%$$

$$\text{Error (\%)} = \frac{27.801.373{,}112 - 26.678.237}{26.678.237} \times 100\%$$

$$\text{Error (\%)} = 4{,}21\ \%$$

- SPSS

$$\text{Error (\%)} = \frac{\text{(Y)SPSS-(Y)Actual}}{\text{(Y)SPSS}} \times 100\%$$

$$\text{Error (\%)} = \frac{28.095.033{,}280 - 26.678.237}{26.678.237} \times 100\%$$

$$\text{Error (\%)} = 5{,}31\ \%$$

In this study, the authors will summarize the percentage of multiple linear regression prediction errors using Python and SPSS. The tabulation of the percentage error prediction of multiple linear regression using Python and SPSS can be seen in Table 6 below.

Table 6. Percent Prediction Error Percentage Using Python and SPSS Tabulation

Project	Profit (Y)	Profit (Y) SPSS	Profit (Y) Python	Error (%) SPSS	Error (%) Python
1	26.678.237	28.095.033,280	27.801.373,112	5,31	4,21
2	12.167.783	14.863.371,202	14.706.791,513	22,15	20,87
3	59.975.346	57.760.515,925	57.158.882,393	-3,69	-4,70
4	4.641.175	5.315.571,153	5.258.079,509	14,53	13,29
5	49.578.750	48.862.171,328	48.353.938,976	-1,45	-2,47
6	1.113.401.875	1.113.896.234,331	1.102.388.886,827	0,04	-0,99
7	75.007.879	91.983.999,163	91.028.019,806	22,63	21,36
8	111.210.000	120.953.944,004	119.697.029,075	8,76	7,63
9	70.519.150	75.310.776,771	74.527.768,853	6,79	5,68
10	100.398.375	97.299.249,943	96.294.317,699	-3,09	-4,09
11	132.860.000	126.486.385,104	125.169.333,575	-4,80	-5,79
12	36.409.440	36.596.069,398	36.215.795,093	0,51	-0,53
13	87.810.750	77.626.796,339	76.822.673,240	-11,60	-12,51
14	86.093.755	93.777.226,846	92.805.305,843	8,92	7,80
15	16.960.320	15.332.496,809	15.171.953,366	-9,60	-10,54
16	23.209.750	22.854.018,755	22.614.546,935	-1,53	-2,56
17	27.888.000	28.691.266,424	28.391.904,575	2,88	1,81
18	74.762.880	77.417.444,432	76.612.762,106	3,55	2,47
19	9.420.000	9.499.803,254	9.399.474,725	0,85	-0,22
20	33.057.240	33.573.155,063	33.223.118,501	1,56	0,50
21	192.579.938	188.868.268,217	186.907.360,469	-1,93	-2,95
22	44.573.880	42.255.813,410	41.815.927,232	-5,20	-6,19
23	105.176.040	106.822.942,169	105.716.667,353	1,57	0,51
24	70.245.565	65.462.432,063	64.781.585,486	-6,81	-7,78
25	5.916.000	6.114.266,444	6.048.942,395	3,35	2,25
26	112.819.905	100.345.198,982	99.303.325,817	-11,06	-11,98
27	64.697.100	60.923.990,000	60.289.912,082	-5,83	-6,81
28	15.196.860	15.454.048,777	15.291.777,551	1,69	0,62
29	47.121.875	46.363.020,449	45.878.245,625	-1,61	-2,64
30	7.860.000	9.760.178,924	9.656.819,075	24,18	22,86

Comparison of Analysis Results

In this study, the authors will compare the analysis results, including the profit value for each prediction method and the error percentage for each. The comparison of the results of the analysis can be seen in the following description.

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Profit Value Comparison

In this study, the authors will compare the profit value or variable y in each profit prediction method that has been carried out. The profit value comparison data will be summarized in graphic format. The profit value comparison chart can be seen in Figure 6 below.

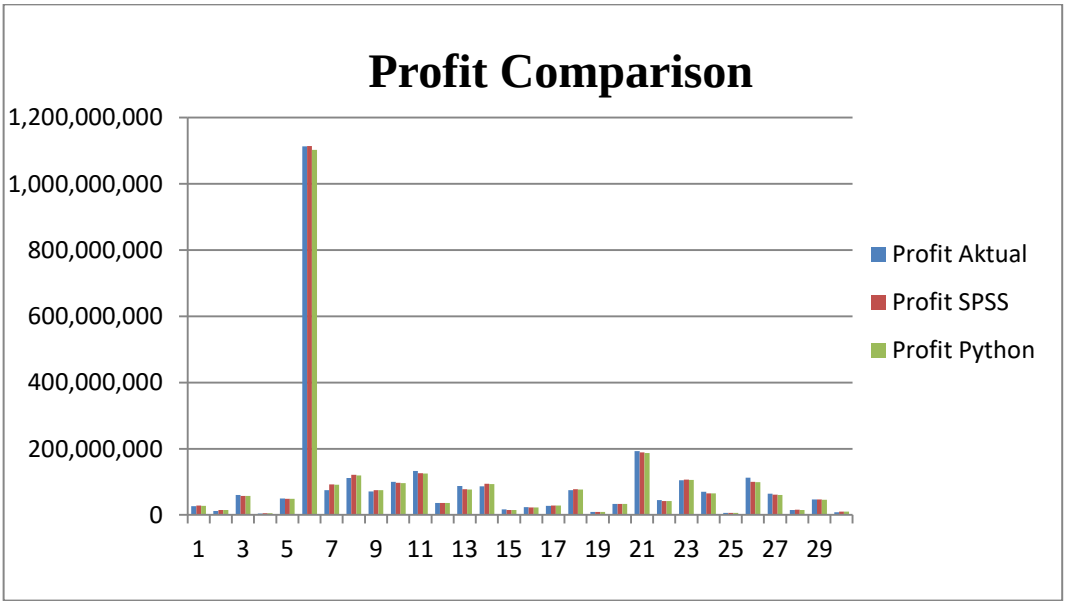

Figure 6. Profit Comparison Chart for Each Method

Error Percentage Comparison

In this study, the authors will compare the percentage of profit prediction errors in each method that has been carried out. The data for comparing the percentage of errors will be summarized in graphic format. The error percentage comparison graph can be seen in Figure 7 below.

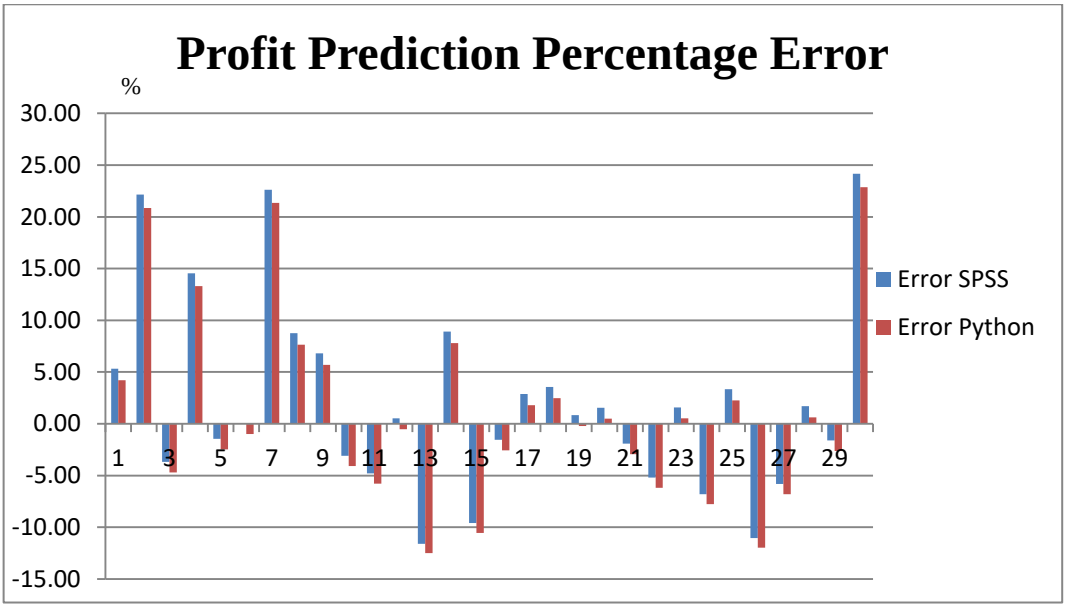

Figure 7. Graph of Profit Prediction Percentage Comparison

4. CONCLUSION

The conclusions of this study can be seen in the following elaboration.

1) The research results show that the r square is worth 0.997. This value indicates that the profit variable is 99.7% influenced by the variable material cost, labor cost, and utility cost, while other variables outside this study influence the other 0.3%. Based on the results of the T-test that has been carried out using Python, it can be seen that the material cost variable has the most influence, namely where the value is below 0.05 compared to the variable labor cost and utility cost to the profit variable.
2) Based on the results of the analysis of the percentage of precision errors carried out by comparing SPSS and Python profits with actual profits of 30 data, it shows that the average percentage of Python prediction errors is worth 0.97%, where the average percentage of python prediction errors is smaller than the average SPSS prediction error percentage is 2.04%.

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