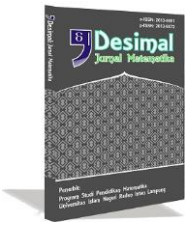
Desimal: Jurnal Matematika Vol 3 No 3 (2020) 287-294

Contents lists available at DJM

DESIMAL: JURNAL MATEMATIKA

p-ISSN: 2613-9073 (print), e-ISSN: 2613-9081 (online), DOI 10.24042/djm

http://ejournal.radenintan.ac.id/index.php/desimal/index



# Daily Profit Analysis: Daily Productivity Scheduling with Multiple Linear Regression

Fredi Ganda Putra*, Muhamad Syazali

Universitas Islam Negeri Raden Intan Lampung, Indonesia

**ARTICLE INFO**

***Article History***
*Received : xx-xx-20xx*
*Revised : xx-xx-20xx*
*Accepted : xx-xx-20xx*
*Published : xx-xx-20xx*

***Keywords:***
*Daily Productivity; Multiple Lenear Regression; Profit.*

*Correspondence: E-mail:
fredigpsw@radenintan.ac.id

Doi:
10.24042/djm.v3i3.11451

**ABSTRACT**

*The purpose of this study was to see which day factors (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday) had the greatest impact on the net income of a store. The method used is a quantitative method using multiple linear analysis. The results show that Monday is the most influential on profits.*

http://ejournal.radenintan.ac.id/index.php/desimal/index

## INTRODUCTION

The business of selling market snacks with a consignment system is a selling point system that only provides a place and receives the deposited goods to be sold, then it will be returned to the producer or distributor who entrusted the product if the goods do not sell (Irawan 2018). Based on the statement above, this consignment system is very profitable, because the risk of loss is very small if the goods are not sold, so it is necessary to know the amount of income. Revenue is the result of a sale of goods or products. The revenue can be seen after the sales process has been completed. This encourages researchers to conduct research on the income of market traders in the market snack sector at the Way Halim Perumnas market, precisely at the Via store.

Problems related to the process of maximizing profits on market snacks at Perumnas Way Halim Market are the optimal solution in sales. Given that the level of profit, selling factors, and market snacks sold by these traders have a close relationship, the solution to the problem used is a regression analysis tool. In this study, the method used is multiple regression analysis method, because the

independent variable in this study is more than one. Multiple regression analysis method is a test technique used to determine the effect of the independent variable on the dependent variable (Yuliandi, Mulyadi, dan Yusuf 2016).

When solving problems using the regression analysis method, one must first translate the constraints contained in the regression analysis problem into a mathematical formulation. This process is known as a mathematical model. Mathematical model can be defined as a mathematical formulation obtained from the results of one's interpretation when translating a regression analysis problem into mathematical language. A mathematical model is said to be good if in the model there are only the parts that are needed. As is the case in the process of selling market snacks at the Way Halim Perumnas market which has several obstacles in selling market snacks. Based on interviews conducted with the owner of the Via market snack shop, Mr. Sabirin at the Way Halim Perumnas market, the Via shop in selling market snacks gets different incomes every day. This is one of the factors that cause the optimum profit has not been achieved. For this reason, we will discuss the optimum advantages of using the regression analysis method.

## METHOD

This research is quantitative research. Quantitative research is research using numbers and analyzing it using statistical data. This quantitative research aims to show the relationship between variables, test theories, and find conclusions that have presentation values (Sugiyono 2015). This study looks for the relationship and the magnitude of the relationship between sales days and sales profits at the Via market snack shop at the Way Halim Perumnas market.

Data collection techniques used using documentation, interviews, and observations. The data analysis technique used is multiple regression analysis with seven independent variables, namely $X_1$ (Monday turnover), $X_2$ (Tuesday's turnover), $X_3$ (Wednesday's turnover), $X_4$ (Thursday's turnover), $X_5$ (Friday turnover), $X_6$ (Saturday turnover), $X_7$ (Sunday turnover) and one of dependent variable $Y$ (net profit).

The multiple linear regression equation used by the researcher is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7$$

Information :

$Y$ = Net profit

$a$ = Constanta

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

## RESULTS AND DISCUSSION

### A. Analisis Regresi Linier Berganda

Based on multiple linear regression analysis between turnover on Monday ($X_1$), Tuesday ($X_2$), Wednesday ($X_3$), Thursday ($X_4$), Friday ($X_5$), Saturday ($X_6$), Sunday ($X_7$), and net profit ($Y$) with the help of SPSS software in data analysis can be obtained from several equation models as follows:

1) Top Multiple Linear Regression Model ($X_1$), ($X_2$), ($X_3$), ($X_4$), ($X_5$), ($X_6$), ($X_7$) against $Y$

**Table 1. Multiple Linear Regression Test Results Model 1**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | *t* | *Sig.* |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -.496 | .152 | | -3.261 | .002 |
| | Monday | .217 | .010 | .436 | 21.441 | .000 |
| | Tuesday | .122 | .011 | .213 | 10.873 | .000 |
| | Wednesday | -.001 | .009 | -.001 | -.110 | .913 |
| | Thursday | .087 | .009 | .202 | 9.497 | .000 |
| | Friday | .106 | .011 | .133 | 9.642 | .000 |
| | Saturday | .085 | .007 | .185 | 12.385 | .000 |
| | Sunday | .010 | .007 | .016 | 1.419 | .163 |

*Source : Data Processing, 2020*

**Table 2. Multiple Linear Regression Test Results Data R (Square) Model 1**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .997a | .995 | .994 | ,110108 |

*Source : Data Processing, 2020*

Based on Table 1, the regression model is obtained as follows:
$Y$ = -0,496 + 0,217$X_1$ + 0,122$X_2$ + (-)0,001 $X_3$ + 0,087 $X_4$ + 0,106 $X_5$ + 0,085 $X_6$ + 0,010 $X_7$
Significance value $X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$ < 0,05 i.e. each of 0,000 ; 0,000 ; 0,000 ; 0,000 and 0,000 indicates that between Monday's turnover ($X_1$), Tuesday ($X_2$), Thursday ($X_3$), Friday ($X_4$), Saturday ($X_5$), partially have a positive and significant effect on net profit ($Y$). It turns out that the significant value of turnover on Wednesday ($X_3$) is 0.913 and Sunday ($X_7$) is 0.163 > 0.05, indicating that Wednesday and Sunday do not have a positive and significant effect on net profit ($Y$). The coefficient value (*R Square*) is the value used to see the extent to which the model formed can explain the actual conditions. The R Square value of the model is 0.995, which means that 99.5% of the net profit earned by Via cake sellers is influenced by the turnover variable on Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. While the remaining 0.5% is influenced by other variables not examined. The formulation of the hypothesis for the regression coefficient is:
$H_0 = \beta_i = 0, i = 1, 2, 3, 4, 5, 6, 7$
$H_1 = \beta_i \neq 0$, (one of $\beta_i \neq 0$)

2) Upper Multiple Linear Regression Model ($X_1$), ($X_2$), ($X_4$), ($X_5$), ($X_6$) to $Y$

**Table 3. Multiple Linear Regression Test Results Model 2**

| Model | Unstandardized Coefficients | | Standardized Coefficients | *t* | *Sig.* |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 2 (Constant) | -.360 | .103 | | -3.494 | .001 |
| Monday Tuesday | .215 | .010 | .431 | 21.511 | .000 |
| Thursday | .122 | .011 | .213 | 11.184 | .000 |
| Friday | .088 | .009 | .203 | 10.136 | .000 |
| Saturday | .109 | .011 | .136 | 10.010 | .000 |
| | .084 | .007 | .181 | 12.347 | .000 |

*Source : Data Processing, 2020*

**Table 4. Multiple Linear Regression Test Results Data R (Square) Model 2**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 2 | .997a | .995 | .994 | ,110151 |

Based on Table 3, the regression model is obtained as follows:
$Y$ = -0,360 + 0,215 $X_1$ + 0,122 $X_2$ + 0,088 $X_4$ + 0,109 $X_5$ + 0,107 $X_6$
The significance values of $X_1$, $X_2$, $X_4$, $X_5$, $X_6$ are 0,000 respectively; 0.000 ; 0.000 ; 0.000 ; 0.000 ; 0.000, indicating that turnover on Monday ($X_1$), Tuesday ($X_2$), Thursday ($X_4$), Friday ($X_5$), and Saturday ($X_6$), partially has a positive and significant effect on net profit ($Y$). The coefficient value (R Square) is the value used to see the extent to which the model formed can explain the actual conditions. The R Square value of the model is 0.995, which means that 99.5% of the net profit obtained by the Via cake seller is influenced by the turnover variable on Mondays, Tuesdays, Thursdays, Fridays, and Saturdays. While the remaining 0.5% is influenced by other variables not examined.

## B. Result of Regression Model

Based on the description of the regression model that has been obtained, it can be seen that the model that has the largest correlation is the second model, namely:
$Y$ = -0,360 + 0,215 $X_1$ + 0,122 $X_2$ + 0,088 $X_4$ + 0,109 $X_5$ + 0,107 $X_6$
variables for Wednesday ($X_3$), Sunday ($X_7$), are not included in the model because on Wednesday and Sunday, the income or income is less than on other days. The selection of the model in this case aims to find out that the selected model can explain the behavior of the dependent variable well. The multiple linear regression model obtained is in the form of a mathematical model which explains that:

1) A constant value of -0.360 means that if the independent variable consisting of Monday ($X_1$), Tuesday ($X_2$), Thursday ($X_4$), Friday ($X_5$), and Saturday ($X_6$) is considered 0 (zero) or If not applied, the net profit for Via stores is -0.360.
2) Monday's regression coefficient ($X_1$) is 0.215, meaning that if the price increases by 1 scale in the respondent's answer, it will increase the net profit at the Via store by 0.215 units assuming other variables are considered constant or constant.
3) Tuesday's regression coefficient ($X_2$) is 0.122, meaning that if the price increases by 1 scale in the respondent's answer, it will increase the net profit at the Via store by 0.122 units assuming other variables are considered constant or constant.
4) Thursday's regression coefficient ($X_4$) is 0.088, meaning that if the price increases by 1 scale in the respondent's answer, it will increase the net profit at the Via store by 0.088 units assuming other variables are considered constant or constant.
5) Friday's regression coefficient ($X_5$) is 0.109, meaning that if the price increases by 1 scale in the respondent's answer, it will increase the net profit at the Via store by 0.109 units assuming other variables are considered constant or constant.
6) Saturday's regression coefficient ($X_6$) is 0.084, meaning that if the price increases by 1 scale in the respondent's answer, it will increase the net profit at the Via store by 0.084 units assuming other variables are considered constant.
7) Thus, it can be seen that the most dominant variable influencing the increase in net profit is Monday ($X_1$),

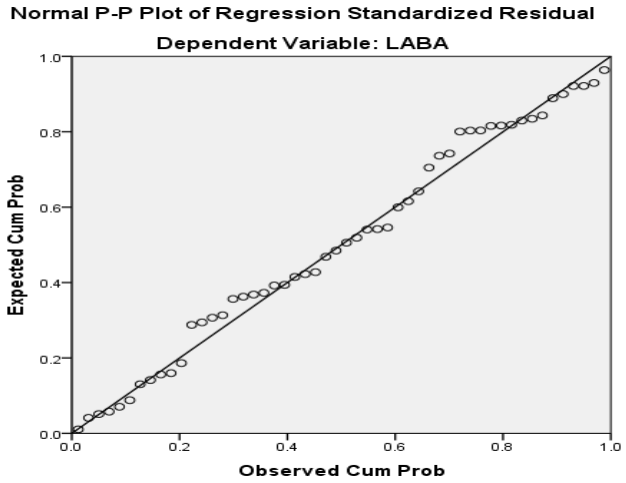
because it has a greater contribution than other days.

## C. Classical Assumption Test Results

The classical assumption test is carried out so that the regression model used can provide representative results. This is done to obtain the right analytical model.

### 1) Normality Test

**Figure.1 Normality Test Results**




*Source : Data Processing, 2020*

The normal probability plot graph above shows that the data spreads around the diagonal line and the distribution follows the direction of the diagonal line, so the regression model fulfills the assumption of normality.

### 2) Multicollinearity Test

**Table 5. Multicolonearity Test Results**

| Model | | Collinearity Statistics | |
|---|---|---|---|
| | | Tolerance | VIF |
| 1 | (Constant) | | |
| | Monday | .294 | 3.403 |
| | Tuesday | .324 | 3.085 |
| | Thursday | .294 | 3.400 |
| | Friday | .643 | 1.555 |
| | Saturday | .547 | 1.829 |

*Source : Data Processing, 2020*

Table 5 shows that the five variables above have a VIF value of 3.403; 3,085 ; 3,400 ; 1,555 ; and 1.829 < 10 and each tolerance value is > 0.1 so it can be concluded that there is no multicollinearity between the independent variables in the regression model.

### 3) Heteroscedasticity Test

**Table 6. Heteroscedasticity Test Results**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 | .139 | .058 | | 2.402 | .060 |
| (Constant) | -.004 | .006 | -.205 | -.783 | .438 |
| Monday | .002 | .006 | .078 | .312 | .632 |
| Tuesday | -.002 | .005 | -.127 | -.483 | .807 |
| Thursday | -.002 | .006 | -.044 | -.246 | .756 |
| Friday | .001 | .004 | .033 | .173 | .864 |
| Saturday | | | | | |

*Source: Data Processing, 2018*

Table 6 shows that the independent variable that is regressed with absolute residual produces a significance value (sig) > 0.05. So it can be concluded that there is no symptom of heteroscedasticity between the variables in the regression model.

Based on the results of the multiple linear regression calculation above, it can be concluded that Monday is the day that has the most positive effect on net profit. This complements some relevant research on the effect of time on profit gain (Adisetiawan 2012; Mona, Kekenusa, dan Prang 2015; Triyanto, Sismoro, dan Laksito 2019; Panggabean, Buulolo, dan Silalahi 2020).

## CONCLUSIONS AND SUGGESTIONS

Based on the results of research and data analysis, a conclusion can be drawn that the mathematical model of the profit selling market snacks, namely:

$Y$ = -0,360 + 0,215 $X_1$ + 0,122 $X_2$ + 0,088 $X_3$ + 0,109 $X_5$ + 0,107 $X_6$.

The highest regression coefficient value in mathematical modeling is the Monday variable regression coefficient ($X_1$) of 0.215. This shows that the most influential variable from profit to sales is Monday ($X_1$).

Based on the conclusion, the authors put forward suggestions for the Via store to reduce or maybe rest or close on Wednesdays and Sundays and for further researchers, things that can be taken into consideration are due to the predictive ability of 5 independent variables on a net profit of 99.5 %, while the remaining 0.5% is influenced by other factors outside the regression model. So it is necessary to conduct an assessment by deepening or developing research variables.

## REFERENCES

Adisetiawan, R. 2012. "Analisis pengaruh kinerja keuangan dalam memprediksi pertumbuhan laba." *Jurnal aplikasi manajemen* 10(3):669–681.

Irawan, Arief. 2018. "Pengaruh Profitabilitas, Likuiditas, Ukuran Perusahaan dan Struktur Aktiva terhadap Struktur Modal (Studi Kasus pada Perusahaan Sektor Properti, Real Estate dan Konstruksi Bangunan yang Terdaftar di Bursa Efek Indonesia)."

Mona, Margareta, John Kekenusa, dan Jantje Prang. 2015. "Penggunaan Regresi Linear Berganda untuk Menganalisis Pendapatan Petani Kelapa. Studi Kasus: Petani Kelapa Di Desa Beo, Kecamatan Beo Kabupaten Talaud." *d'CARTESIAN* 4(2):196–203.

Panggabean, Devi Sari Oktavia, Efori Buulolo, dan Natalia Silalahi. 2020. "Penerapan Data Mining Untuk Memprediksi Pemesanan Bibit Pohon Dengan Regresi Linear Berganda." *JURIKOM (Jurnal Riset Komputer)* 7(1):56–62.

Sugiyono. 2015. *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.

Triyanto, Ervan, Heri Sismoro, dan Arif Dwi Laksito. 2019. "Implementasi Algoritma Regresi Linear Berganda Untuk Memprediksi Produksi Padi Di Kabupaten Bantul." *Rabit: Jurnal Teknologi dan Sistem Informasi Univrab* 4(2):73–86.

Yuliandi, Yuliandi, J. M. V. Mulyadi, dan Muhammad Yusuf. 2016. "Pengaruh Profitabilitas, Tangibilitas, Risiko Bisnis, Pajak, Non Debt Tax Shield Terhadap Struktur Modal Serta Implikasinya Terhadap Nilai Perusahaan." *JRAP (Jurnal Riset Akuntansi dan Perpajakan)* 3(02):251–263.