

The Effect of Job Division, Promotion, Project, Salary, Length of Work With Employee Turnover Using Logistic Regression Analysis

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ABSTRACT

Keywords:
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This study aims to examine the effect of job division, employee promotion, projects, salary, and length of work on employee turnover rates in an organization. The use of logistic regression analysis is used to identify factors that contribute to employees' decision to leave their jobs. Data for this study was collected through surveys involving employees in various divisions within the selected organization. The dependent variable is the employee's turnover status (resigning or not resigning), while the independent variable includes job division, employee promotion, project, salary, and length of work. The results of logistic regression analysis show that Employee Salary has a significant influence on employee turnover rate. A competitive salary can be a determining factor in influencing an employee's decision to stay in the job. The results of this study have a sensitivity level of 45%, meaning the goodness of the model in predicting employees who do not leave the company. The results showed that the level of specificity is 82% predicting employees who leave the company so this model is very good in this case. The results of this study provide important insights for organizational management in managing employee turnover rates. By understanding the influence of these factors, organizations can take appropriate steps to increase employee satisfaction, retain valuable talent, and reduce costs and disruptions caused by employee turnover.



Introduction

In the work environment, companies often face challenges related to high employee turnover rates (Hong, Hao, Kumar, Ramendran, & Kadiresan, 2012). The departure of valuable employees from the organization can have a negative impact on various aspects, such as loss of knowledge and skills, the cost of recruiting and training new employees, and a decrease in team motivation and productivity (Bode, Singh, & Rogan, 2015).

One of the efforts that can be made to overcome the problem of employee turnover is to understand the characteristics of employees who choose to resign from the company.

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In this context, studying and analyzing the factors that influence an employee's decision to resign is important (Zhu, Sawhney, & Upreti, 2016). The characteristics of resigned employees include various aspects, such as age, length of work in the company, education level, level of job satisfaction, and motivational factors that influence their decision to leave the company (James & Mathew, 2012).

Previous research proved that employee turnover tendencies are influenced by employee productivity, this analysis uses Random Forest using 26 bound variables and the result is a model accuracy rate of 87.76%. While another study by (Sexton, McMurtrey, Michalopoulos, & Smith, 2005) proved that the tendency of employee turnover is long worked, Sexton uses the neural network method with a model accuracy rate of 76%.

Based on previous research and the background exposure above, therefore researchers intend to conduct this study to determine whether the variables influence job division, employee promotion, project, salary, length of work with employee turnover using logistic regression analysis (Osibanjo, Salau, & Falola, 2014).

One of the most famous theories of turnover is Victor Vroom's Expectancy Theory in 1964. This theory states that job satisfaction is determined by employees' perception of the relationship between effort made, performance achieved, and rewards received (Kane-Sellers, 2007). According to this theory, employees will feel satisfied if they have high expectations that the effort they put in will result in good performance, and good performance will be rewarded with adequate rewards. Therefore, companies must ensure that employees feel that their efforts are recognized and rewarded with appropriate rewards (Maertz Jr, Griffeth, Campbell, & Allen, 2007).

The results of previous research to analyze employee turnover have been widely conducted. One of them is done by (Mohamad, Nasaruddin, Hamid, Bukhari, & Ijab, 2021), analyzing employee turnover with a machine learning approach. The number of variables used is 26, one of which is employee productivity variables that affect employee turnover. The method used is Random Forest, with an accuracy rate of 87.76%.

Furthermore, it was carried out by (Sexton et al., 2005) using neural network methods to predict employee turnover. The study used 29 variables. The researcher used a genetic algorithm to optimize the model. The accuracy obtained from the model is 76%. The most influencing variable in employee turnover is the length of work of the company's employees (Jang & George, 2012).

Based on previous research, the same will be done with the Kasir Pintar International company. This study will analyze the behavior of employees who have resigned from the company using 10 variables and using logistic regression methods. More about this research is explained in chapter 2 onwards (Parkes & Langford, 2008).

From the formulation of the problem above, it can be known that the objectives of this study are as follows:

1. To determine the effect of the work division on the tendency of employees to resign (turnover)
2. To determine the effect of employee reviews on the tendency of employees to resign (turnover)
3. To find out the work project affects the tendency of employees to resign (turnover)
4. To find out employee salaries affect the tendency of employees to resign (turnover)
5. To find out the length of work affects the tendency of employees to resign (turnover)
6. To find out the average working hours affect the tendency of employees to resign (turnover)

Research Methods

A quantitative approach was used in this study. The quantitative approach focuses on numerical data processed by statistical methods. Statistical techniques in this study were used to analyze sample data. A quantitative approach is carried out on causal research that is used to identify cause-and-effect relationships. When something causes an effect (independent variable), it means bringing or making that something happen (dependent variable) (W G Zikmund, Babin, Carr, & Griffin, 2013). In this study, the independent variables are the division of work, employee promotion, projects carried out, employee salaries, length of work, while the dependent variable is the tendency of employee turnover.

Data Types and Sources

The type of data source used in this study is quantitative data. Quantitative data is data in the form of numbers or numbers. The data can be in the form of the informant's age and other information related to numbers. While the data sources that will be used in this study include:

Secondary data

The data used in this study is cross sectional data or secondary data is a source of data that is faster and cheaper to collect than primary data, especially if secondary data can be accessed digitally (William G Zikmund & Stanton, 2017). Secondary data does not need to be collected by other researchers, instead it is collected by a company or other type of organization (third party) for its own purposes. All secondary data need to be mastered by researchers (Bryman, 2016).

Population and Research Sample

Population refers to the complete set of elements that are expected to be studied and from which conclusions can be drawn, where elements in the population are individual participants or objects chosen to be investigated (Cooper & Schindler, 2014). The population at PT Kasir Pintar is 40 people so to calculate the number of samples to be taken, the Slovin formula is used as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Information:

n= Number of Samples n= Number of Population

e = Margin of Error.

So from the calculation above with e = 0.05 then the result is 35. So the number of samples taken was 35 people.

Logistic Regression Analysis

Multiple linear regression tests are used to determine how much the independent variables tested can affect the shift in values in the dependent variable. In general, Y observation data is formed with a formula formula.

$$y = f(\beta_0 + \beta_1x_1 + \beta_2x_2+\dots \beta_nx_n)$$

Information:

Y = Job Satisfaction f = Constant

b1 = regression coefficient of the variable X1 X1 = Division of Work

b2 = Multiple regression coefficient of variable X2 X2 = Employee Promotion

B3 = Multiple regression coefficient of variable X2 X3 = Employee Promotion

n = total variable

Results and Discussion

PT Kasir Pintar Internasional

PT Kasir Pintar Internasional is a technology company based in Indonesia. The company focuses on developing software and hardware solutions to help small and medium-sized businesses manage their financial and operational transactions more efficiently.

As a technology company, PT Kasir Pintar Internasional provides a digital cashier platform that allows businesses to make electronic payments, manage inventory, and track sales in real-time. This digital cashier solution is designed to help business owners in various sectors, such as retail, food and beverage, professional services, and more.

Some of the features and services offered by PT Kasir Pintar Internasional include:

- a. Digital Cashier Application: The company provides a digital cashier application that can be downloaded and installed on mobile devices, such as smartphones or tablets. This application allows business owners to record and process payment transactions easily and quickly
- b. Inventory Management: PT Kasir Pintar Internasional also provides inventory management features that allow business owners to track stock of goods, organize product categories, and monitor sales more efficiently. This helps in timely inventory management and better decision making regarding product procurement.
- c. Reporting and Analytics: The company provides reporting and analytics features that assist business owners in analyzing their business performance. Sales data, stock items, and other transactions can be accessed and analyzed through intuitive dashboards, so business owners can identify trends, understand consumer patterns, and take strategic steps to improve efficiency and profitability.
- d. Integration with Financial Services: PT Kasir Pintar Internasional has partnerships with various financial service providers, including online payment companies and financial institutions. It allows business owners to accept payments through a variety of methods, such as credit cards, digital wallets, or bank transfers.

Table 1

Logistic Regression Results

Variable Name	Coefficient	P-Value
const	-27.2328	1
promoted	-18.5767	0.998
project	-0.3504	0.666
salary	-1.843	0.084
lama_kerja	-0.1426	0.654
divisi_Data	36.6812	1
divisi_Finance	37.8211	1
divisi_HR	38.3231	1

divisi_Marketing	37.9678	1
divisi_Product	37.0658	1

Based on the results of table 1, using a confidence level of 0.05, there are no variables that have a significant effect on the condition of employees who resign. However, further analysis can be carried out, namely using Recursive Feature Elimination (RFE). Using RFE, we can see variables that are important for measuring employee resignation status. Here are the results of the RFE analysis.

Table 2
RFE Analysis

Variable Name	Rank
Constanta	11
promoted	4
project	6
salary	1
lama_kerja	10
divisi_data	8
Variable Name	Rank
divisi_finance	7
divisi_HR	2
divisi_marketing	3
divisi_product	9
divisi_tech	5

From Table 2, it is found that the variables that are important according to RFE analysis in influencing employee resignation are salaries and then employees working in the HR division. And the least important in influencing the decline of employees is lama_kerja and work in divisi_product. This proves that salary plays an important role in employee decline. The regression model produced a 74% accuracy rate in predicting employee setbacks from the company. The sensitivity rate is 45%, and the specificity is 82%. The number signifies, for sensitivity, the goodness of the model in predicting employees who do not leave the company. Specificity is the opposite, so this model is excellent in this case.

Conclusion

Based on the problems that have been formulated, the results of analysis and hypothesis testing that have been carried out in the previous chapter, then from the research carried out the following conclusions can be drawn:

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1. The results showed that salary (X4) and then employees working in the HR division means there is a positive and significant influence between motivation and resignability.
2. The sensitivity level in this study is 45%, meaning the goodness of the model in predicting employees who do not leave the company.
3. The results showed that the level of specificity is 82% predicting employees who leave the company so this model is very good in this case.

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