ABSTRACT

Every Information Systems Study Program student at Telkom University is required to plan electives to be taken starting in the fifth semester. Around 347 Information System students will choose specialization. This specialization determination aims to focus Information Systems students in a particular field, so that each student can learn more deeply in one scientific field. In addition students are expected to become professionals in their fields. The Information Systems Study Program at Telkom University provides seven specializations to focus on in its scientific fields. Each student must have one specialization field. At the time of specialization selection, there were still many students who had difficulty choosing a specialization in accordance with the expertise group. So finally they choose a field of specialization that they are considered easy and follow the choice of friends, without seeing the potential or abilities they have. The reason students have difficulty in specialization is due to lack of digging information about what competencies are needed to take specialization.

As a result of students who choose specialization that is considered easy and following friends is the division of the number of class is not evenly distributed with the number of lecturers there. Usually there are more ESA expertise groups than ESD expertise groups. Because students choose specialization that is considered easy, and avoid courses that study more in programming languages.

Based on these problems, an analysis is needed to predict specialization in the Information Systems Study Program using the regression method. In the regression method, there are three algorithms that will be applied in this research, namely, multiple linear regression algorithm, which is to determine the estimation or prediction on independent variables. Then the Support Vector Regression algorithm is for algorithms that have high dimensions that are suitable for statistical learning implementation. Then there is the logistic regression algorithm which has a relationship of two more variables and is suitable for making predictions. This method was chosen because it has the advantage of being a statistical modeling technique to determine the relationship of two or more variables or to predict the value of one response or dependent variable by using the value of predictor / independent variables.

The parameters to determine accuracy are using Root Means Squared Error (RMSE), Mean Absolute Error (MAD), and Mean Squared Error (MSE). The results showed the best prediction model was using the Support Vector Regression (SVR) algorithm with an RMSE value of 0.789, MAD of 0.216, and MSE of 0.772. The best accuracy results will be implemented on the website to make predictions.

In the process of implementing the results of the analysis, it is necessary to design a Website that contains the predictions of students who are accepted at specialization. The Website design uses the laravel framework and the PHP programming language. Laravel was chosen because it is open source and easy to implement. In addition, the process is assisted with tools, which use Rapid Miner to determine the accuracy of each algorithm. Then use Pentaho Data Integration to process ETL (Extraction, Transformation, Loading and the results will be applied to the Website.

Research is expected to provide recommendations in helping students determine the appropriate specialization in accordance with their competencies. Then it can help the head of the study program and professional lecturers in making decisions in the field of determining specialization that is fast and appropriate in the Information Systems Study Program at Telkom University

Keywords: Specialization, Regression, Information System Selection, Telkom University, Website.