

ABSTRACT

CV ABC is a business entity engaged in logistics and expedition services that focus on shipping to Medan, established in 2014 and located in Bandung. Based on the results of observations, it is known that the number of transport vehicles is 2 trucks and 4 small-sized pickup vehicles. CV ABC currently has 2 shipping directions, namely the western region which has a branch office in the city of Medan and the eastern region which is located in Surabaya. Based on these results it is known that the owned fleet is unable to meet customer demand so that CV ABC subcontracts with vendors to fulfill customer requests. Based on the shipping data, there were 31 sender failures. 22 of them were shipments to the eastern region. There were delivery failures of 22 out of a total of 84 items in shipments to the eastern region. The target set by CV ABC is 100% shipments while the percentage of shipments to the east is 73.80%. There is a difference in the number of shipments to the east of 26.19% so that a decision support system is designed to choose the best alternative vendor. There are a total of 11 alternative solutions in CV ABC.

In this study, the design was carried out by combining the AHP and TOPSIS methods. Criteria weighting is done using the AHP method where AHP is a decision support model that is widely used to weight criteria so as to produce priority criteria. Because it is able to calculate the consistency level of criteria weights. In this study the TOPSIS and SAW methods are used to find the best alternative solutions and validate the company to find out the right method according to company needs where the TOPSIS method is a multi-criteria decision-making method while the SAW method is a weight sum method where the SAW method adds up the weights of any performance appraisal. Furthermore, the Waterfall method is used to design a decision support system. The waterfall model is the most widely used model in Software Engineering. This development model takes a systematic and sequential approach. It is called a waterfall because each stage runs linearly or sequentially.

In calculating the weight of the criteria and sub-criteria in AHP, it is necessary to determine the criteria and sub-criteria. The criteria and sub-criteria used in this

Keywords: AHP, TOPSIS, SAW, Waterfall, transportation services