

## **ABSTRACT**

*Vendor selection is one of the step to get the quality and fulfillment of time in accordance with the company's target to obtain competitive advantages. To achieve the advantages, we need an evaluation of vendor performance in a structured assessment to determine track record of the vendor's work. With proper selection of vendors, the PT.TELKOM can achieve competitive advantage in the competition with its competitors.*

*Fuzzy Analytical Hierarchy Process (AHP) is selected as the method that can overcome these problems. AHP is a method of weighting by dividing the criteria into a more detailed form of the assessment in hierarchy to get weight. For assessment methods used in the assessment, fuzzy set of values is used to fill the form. This evaluation method allows the assessor to include elements of subjectivity in the assessment and tolerate the lack of precision of assessment, so that assessment can be done better.*

*Using Fuzzy AHP as a method of assessment with a web-based, data processing can be done by computerized, so that elections of vendor can be conducted more easily, quick, and rich in information without having to change existing business processes.*

*From the analysis of the system recommended the use of vendor selection should be used into quantity measurements to obtained results more accurate. In addition, the assessment carried out after the contract has been completed so the memories of field supervisor who assess the vendor performance is still fresh.*

**Keywords:** *Decision Support System, Performance, Vendor Assessment, Fuzzy Analytical Hierarchy Process (AHP)*