CHAPTER 1

INTRODUCTION

1.1 Background of Study

Education in general has the meaning of a life process in developing each individual to be able to live and carry out life (Alpian et al., 2019). Because of the significant roles and responsibilities that tertiary institutions play, particularly in the process of producing the nation's next generation, universities are required to be able to carry out the educational process professionally. (Sumarsono et al., 2021). Higher education has an important role in creating competitive and well-skilled human resources in accordance with market needs (Harapani, 2020; Indrajit, 2020). In addition, quality universities can also produce national leaders and thinkers who can determine the country's future development, thereby producing the best generation of the country (Abidin 2017; Kuntarto, 2017).

In terms of facilities and quality of service, higher education institutions are among the educational institutions that cannot be separated from the services offered to students. The services provided to students are a tangible form of the university's commitment to be able to compete with other universities. To be able to compete competitively, universities must have advantages so that they can win the competition. One form of excellence can be seen from the student services provided to students at universities (Santoso, 2017). In order for a university to compete with other universities, a university must have a competitive advantage in order to win the competition. One of its advantages can be seen from the quality of service provided by the university to its students. If students are satisfied, it is possible that students will be loyal to the institution (Ratnasari, 2016). In improving the quality of academic services, it is necessary to measure student satisfaction as the main respondents by higher education institutions to find out how satisfied students are with the services provided by the university through questionnaires as a tool that is considered effective and accurate. Data retrieval using techniques with distributing questionnaires via online google forms to respondents. The method used is the Likert scale survey method (Sugiyono, 2018).

At the Universitas Muhammadiyah of East Kalimantan (UMKT) is a university that follows the progress of education. Which is where the progress of the university depends on the satisfaction of students who have been provided with services by the university. Progress at a university depends on providing a level of service to students. Because the quality of service in education is very important, it can help agencies in providing quality services that are in accordance with what students expect. Measurement of student satisfaction is an activity that must be carried out regularly to determine the level of service that has been provided. By knowing the level of student satisfaction, the University can improve service if it is not good and further improve service if the level of satisfaction is good. In measuring satisfaction, it focuses on the Department of Mechanical Engineering, which is one of the study programs at the Universitas Muhammadiyah Kalimantan Timur. The mechanical engineering department must prioritize student satisfaction by providing the best service. Service quality will affect the satisfaction felt by service users, especially in this case are students (Prasetya and Harjanto, 2020).

Students are one of the most important assets for a higher education institution. In this case, students as consumers who enjoy educational services from the academic field need to consider whether they are satisfied or dissatisfied with the services provided because one way to increase learning motivation is to provide good quality educational services to students. Quality educational services will have an impact on their satisfaction and of course will indirectly affect their learning motivation (Sumarsono, 2021). Students will feel satisfied if they get service quality that matches or exceeds expectations and students feel dissatisfied if the quality of service does not match student expectations (Takalapeta, 2018). Student satisfaction is an important factor in realizing student achievement in both academic and non-academic fields. Research on satisfaction becomes very important because several studies on this issue have been discussed using various methods, such as the research conducted by (Fadillah, et al., 2020) using the C4.5

Algorithm method, (Sari et al., 2019) using the the Naive Bayes Algorithm method, and (Parlambang and Fauziah, 2021) using the K-Means Method. Among previous studies, this research will use one method, namely the c4.5 algorithm. To determine the level of student satisfaction, analysis can be carried out using a classification technique using the C4.5 decision tree algorithm. The C4.5 algorithm is one of the case-solving solutions that is often used to make decision trees in solving problems in classification techniques that have characteristics, namely the process of determining the entropy value and gain value. A study explains that the C4.5 Algorithm is a classification technique using entropy and information gain as a separator in the decision tree (Florence A.M and Savithri.R., 2013). A common classification algorithm, the decision tree has a straightforward structure and is simple to understand, E. Elisa, (2017). The tree that is formed resembles an upturned tree, where the root is at the very top and the leaves are at the bottom. Choice Tree is an order model that is molded like a tree, where the Choice Tree is straightforward even by untalented clients and is more productive in prompting information (E. S. Rahayu, R. S. Wahono, and C. Supriyanto, (2015).

Based on experimental results and evaluations from previous studies, it shows that the C4.5 Algorithm is applied accurately to simplify complex rules so that decision-makers can better understand the used concepts and solutions to problems. And based on the problems above, this research is very important and worth doing because the object of this research has never been done even though it is both related to satisfaction. The results of the analysis can be used as a reference for evaluating what needs to be considered and prepared to increase student satisfaction, such as previous studies which also used the C4.5 Algorithm method. The C4.5 algorithm is an algorithm that is widely applied in various sectors, such as health (Junaedi et al., 2019), social (G.I. Sudipa, 2020), and education (Islamuddin, 2019). So this study uses the C4.5 algorithm to analyze student satisfaction in the Department of Mechanical Engineering.

1.2 Problem Statement

At the Department of Mechanical Engineering at Universitas Muhammadiyah Kalimantan Timur, the issue at hand is the C4.5 Algorithm method's analysis of student satisfaction with the offline learning process.

1.3 Research Objective

The primary objective of this study was to investigate student satisfaction in the Mechanical Engineering Department. The following is a description of the research's goals:

1. Collecting data through distributing questionnaires to respondents in the context of student satisfaction.
2. Perform validity and reliability tests to determine the appropriate parameters.
3. Data processing using the C4.5 algorithm method.
4. Evaluation of the C.45 algorithm model.

1.4 Research Scope

The problem limitation used in this research is to focus on the object, namely the Department of Mechanical Engineering, Faculty of Science and Technology, Muhammadiyah University, East Kalimantan, participating in offline learning for the class of 2019.