

ABSTRACT

To support the implementation of current hybrid and blended learning, a Learning Management System (LMS) is needed. LMS is designed to facilitate the delivery of learning materials and assist in managing the teaching process and user interactions. LMS can store all historical activities that occur within the system, commonly known as an event log. The log contains information about the learning process that can be used to identify learning patterns among students. Process mining methods are utilized to analyze the existing learning processes of students, depicted through process models. Multidimensional analysis is applied to gain a comprehensive understanding of the data, and the process cube provides an overview of the data from various dimensions such as slice, dice, roll-up, and drill-down. This is supported by process mining tools like Celonis to discover the learning process models in the Tata Kelola and Manajemen Teknologi Informatika courses from different dimension perspectives including time, course, instructor, CLO, and CLO scores. Based on the application of these methods, a process model is generated, providing information from the perspectives of the available dimensions. After obtaining the process model, conformance checking is conducted to assess its alignment with the event log. The best conformance values for each process model are transformed into BPMN to explain information more easily. This research produces a recommended ideal process model flow. For example, in the Tata Kelola dan Manajemen Teknologi Informatika course students who have mostly achieved the Course Learning Outcomes (CLOs), they perform activities in the Learning Management System (LMS) such as assignments, quizzes, files and H5P interactive content.

Keywords – Process Mining, Multidimensional Analysis, Process Cube, Event Log