ABSTRACT

Many companies today implement ERP systems to carry out its business processes. The use of ERP systems will produce an event log that contains the records of how each activities in the business processes is actually carried out by the users of the systems. The event log can be used by the company to model their business processes. Modelling of a business process using event log requires a method called process mining. Research on process mining has been growing rapidly. However, there has not any studies that analyze the performance of the different process mining algorithm in terms of control-flow in different business processes within an ERP application.

This thesis conduct a performance comparison of four process mining algorithms namely Alpha++, Duplicate Task Genetics, Genetic and Heuristic Miner on two SAP business processes, i.e. production planning and materials management. First, the event logs of the two business processes are extracted from PT. XYZ. Then the event logs are processed by process mining application, called ProM. After the model processes are generated, evaluated using the conformance checking, f-score metrics, and evaluation of the ability to handle control-flow.

Findings from the research shows that the best algorithm according to conformance checking in production planning is duplicate task genetics, while the heuristic miner is the best algorithm for materials management. Algorithm that has a good ability in handling control-flow is heuristic miner. Overall, it was also found that heuristic miner is able to handle control flow, gives high performance to model the business process and achieve it in a short running period.

Keyword: process mining, algorithm, control-flow, SAP.