DESIGNING A DECISION MAKING TOOL FOR DETERMINING AIRCRAFT SCHEDULE AND ROUTE CONSIDERING THE MAINTENANCE NEEDS

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ABSTRACT

Along with the development of the aviation industry in Indonesia, aviation companies are pushed to make the most of their resources in order to gain as much revenue as possible while keeping on following the rules. In order to do this, the easiest aspect to optimize is the operational aspect, which includes aircraft scheduling, aircraft routing, crew scheduling, and manpower planning. In order to answer this challenge, this research will make a decision making tool for determining the schedule and the route of aircrafts, while showing the delay which will happen along with that decision. The model used on this research is a model by Bazargan (2004) about aircraft routing which is an evolution of the set covering problem. The model’s goal is to minimize the idle time of an aircraft before heading to cover another schedule. This tool is tested by making sure that the results have passed some of the constraints such as having to overcome the turnaround time, and having visited a town which has a maintenance facility. After that, this tool is validated by comparing the system’s result with the manual routing. Experimental studies are made by changing the input of number of aircraft used, the turnaround time, and the daily maximum utilization. By this experiment we can conclude that the more the aircraft we are using, the less of the delay will be. This also occurs to the turnaround time, with less turnaround time causes the schedule to have less delay. Decreasing the daily maximum utilization could cause less delay but on the other hand, it causes airplanes schedule to not be fulfilled.

Key words: Flight Scheduling, Aircraft Routing, Maintenance