

ABSTRACT

Telecommunications services are very important in modern life to support communication access. The development of cellular access technology is currently converging towards the use of Long Term Evolution (LTE) technology. Currently, the development of LTE network usage in urban areas is very high and has shown network traffic density. There are frequency options to expand the LTE network, namely the frequencies of 700 MHz, 2100 MHz, and 2300 MHz.

In this study, a sensitivity analysis will be carried out using two scenarios on the choice of frequencies, namely the frequencies of 700 MHz, 2100 MHz, and 2300 MHz including an analysis approach with capacity planning and coverage planning. Close to the right analysis will be simulated to see the exact implementation parameters on the candidate for LTE network. While the analysis for the economic side uses techno-economic calculations. The results of the study according to each candidate's frequency in technical and economic terms will use sensitivity analysis.

The calculation results show that for the two scenarios at the three frequencies, the RSRP value is very good, the SINR value is in the normal category, and the throughput is very good. The results from the economic side in scenario one, the three candidate frequencies have negative NPV values and in the second scenario, the 700 MHz frequency has results that are not feasible to implement. So with sensitivity analysis, we get the minimum ARPU and the lowest target number of users so that it is feasible to implement for LTE networks. The final result of the analysis shows that in the first scenario the 700 MHz frequency has the minimum threshold and the minimum number of target users with the best technicality. Meanwhile, in the second scenario, the frequency of 2300 MHz is quite technically feasible and has the minimum ARPU value and user target.

Keywords: *LTE, LTE Planning, Sensitivity Analysis*