

ABSTRACT

The submarine cable communication system (SCCS) is a telecommunications network that connects several islands and countries using optical fiber, which is deployed under the sea as the transmission medium. In building the SKKL network, careful planning is needed so that the network built can be efficient and right on target. For example, in determining the landing station, the distribution of the SKKL network can cover large areas and have high demand. There are several considerations in determining the route and landing station in the SKKL network, such as avoiding fishing areas and avoiding vital state objects. This is to protect the marine ecosystem itself and to secure the cables that will be deployed so that the lifetime of the cables can be maximized (can last for 20-25 years). Paying attention to the technology and network configuration used, considering that fiber optic affects cable attenuation and transmission delay from optical signal conversion, which can affect the quality of the signal sent. Apart from that, pay attention to the projected increase in population and market potential for the next twenty years.

Therefore, this research will conduct a study on technical, economic, and regulatory analysis regarding the deployment of submarine cables. The analysis will be carried out in the Province of East Kalimantan, which has a high potential user, considering the movement of the State Capital to this Province. Technical analysis is carried out to compare signal quality such as BER, Q-Factor, the power received, and transmission delay values on existing and new networks by implementing Multi Protocol Lambda Switching (MP λ S) in the routing process, this is intended to reduce signal conversion delays that occur along with the network. The economic analysis aims to conduct business feasibility and sensitivity analysis against the network to be built. Furthermore, the regulatory analysis was carried out using a compliance analysis of existing regulations regarding the development of the submarine cable communication system (SCCS).

The results of the analysis will be explained as follows. Based on technical analysis, the addition of a new landing station using MP λ S can reduce transmission delay by 25 % to 30 %, and produce a better bit error rate when compared to the existing network. In business analysis, adding a new landing station is feasible with the value of the eligibility test indicator as follows: IDR 19.977.868.811 of NPV; 23,88 % of IRR; 6 years nine months of PP; and 1,322 of PI. Based on sensitivity analysis, the most impactful parameters are the interest rate used and the growth of users each year.

Keywords: Submarine Cable Network, Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), Indonesia Global Gateway (IGG).