ABSTRACT

The development of information and telecommunications technology leads to a broadband service. Operators are challenged to improve their quality of service not only in terms of the speed and capacity but also the coverage areas. These services can be improved by implementing reliable technology; and one of these technologies is the use of optical fiber. This optical fiber is capable of delivering bandwidth up to 100 Mbps using GPON-based technology. It is expected that the implementation of this optical fiber meets the needs of customers.

This thesis analyzed technologically and economically the implementation of Fiber Optic on existing operator network . The design of the fiber optic with the GPON technology used FTTC configuration. The Analysis model used was based on the principle of economic techno, which used the calculation prediction of the number of speedy users and the number of families in the south Cimahi until year 2022. The calculation used the Minitab-15 applications. The Design analyzed economically and

measured the cost feasibility which incurred for the implementation using the DCF method.

This thesis carried outthree scenarios namely: optimistic, moderate and pessimistic. The results of those three simulation scenarios showed that the greatest NPV was obtained from the optimistic scenario in which the NPV was Rp. 38,781,820,804, IRR was 18.73%, and the return of investment was four years and five months. The results of sensitivity analysis revealed that the achievement of the target was affected by the rate factors and the number of customers.The results of risk analysis when the factor of subscriber number was in the worst conditions showed that the possibility of NPV value remained positive. Therefore, the implementation of optical fiber in South Cimahi was feasible. In addition, this optical fibre in other areas could be implemented based on the related demographic and geographical data.

Keywords: GPON, techno-economic, Minitab-15, PDF