

## ABSTRACT

The ability of the optical fiber to transmit three different wavelengths designed to produce output 32 customers (home pass) with an optical splitter ratio of 1: 4 and 1: 8 .This would be problematic when the number of requests in an area with a demand that vertical building in an area .There some way to meet the demand that vertical building request by way of re-engineering of optical networks to meet the demand and meet triple play services at the speed of 10 Mbps up to 100 Mbps . It is also necessary to optimize cost when deploying optical network infrastructure.

In this study, we present a modified optical splitter ratio of 1: 4 and 1: 8 into the optical splitter ratio of 1: 8 and 1:16 and conduct comparative analysis with a splitter ratio of 1: 4 and 1:32 and analyze shifting distance from the feeder cable Optical Line Termination up to Optical Distribution Cabinet .The traffic analysis and techno economic analysis to determine the feasibility of deploying the infrastructure.

Based on the research we Investigate feasibility analysis of network and Comparison for Optical Splitter 1:32 and two Stage 1: 8 and 1:16, 1: 4 and 1:32 and Evaluate the actual cost of benefits, we performed a detailed techno economic analysis. For the estimation of the OSP CAPEX per user. In this study, it can be proven that a decline in investment costs by 32%, Cost per user before the design is at 15 US \$ per user, while after design changes to 13 US \$ per user. The design of the use of the Multi Ratio Splitter 1: 8 and 1:16 still meet the criteria for Link Power Budget <28 dB so that proper for deployments. More flexible deployments (in terms of trenches 'and ducts' sizes) are expected to further improve the cost savings and increase of the estimation for 32% cost reduction

**Keywords:** Multi optical splitter, investment Feasibility Analysis, GPON, FTTx