

## **Abstract**

This research raises the main role of optical fiber in present day technology as an information carrier with high bandwidth capacity and extraordinary speed, as well as its superiority in resistance to electromagnetic wave interference. In its development as a conducting medium, the potential for attenuation due to the elongation and splicing of fiber optic cables is an important concern. This attenuation indicates potential information loss. Therefore, this research proposes an approach to the calculation of attenuation through the hyperlink strength budget method. This method includes analysis of records based on standards as well as measurements with optical power meter devices. This research is focused on the implementation of the hyperlink electricity finances method on gigabit passive optical network (GPON) services to ensure that information can still be received by the end device on the fiber optic network to the customer's home, especially at STO Telkom Pasar Kemis. The calculation and analysis results show that the system is able to operate under regular conditions and GPON services can be accommodated properly. This research contributes to understanding the performance of fiber optic networks in dynamic environments, while demonstrating that the application of the hyperlink strength budget method can effectively overcome potential attenuation and information loss. The practical implication of this research is better implementation in the planning, utilization, and maintenance of fiber optic networks to ensure reliable and efficient information delivery to customers.

Keywords: GPON, Fiber Optic