ABSTRACT

Many areas in Indonesia are still lack of reliable access to internet services because their areas are rural and difficult to reach. Several existing fixed broadband service providers in Indonesia have difficulty in offering high-quality and affordable services to all segments of the population, especially in rural and remote areas. SpaceX offers Starlink service that can be an alternative solution for remote areas in Indonesia which implementation is difficult to reach by Fiber to the x (FTTx) infrastructure. West Java, the highest population province in Indonesia with 50,345,000 people lives in it, has various types of landforms with different characteristics of each area.

This research analyzes the performance of Starlink that hasn't been widely used in Indonesia in dense urban, urban, suburban, and rural areas, representatively. To see the real application's quality, this thesis conducts performance tests of Starlink and its comparison with FTTx in each representative area to estimate reliability, including analyzing the actual throughput, latency, packet loss and availability. As a developing country, the economic conditions of regions in Indonesia are significantly different, hence, the economics aspect to analyze cost-effectiveness and affordability for end-users, needs to be done.

Between the four areas, Starlink shows has only 6.6 Mbps difference between the highest and the lowest download throughput result, which shows that Starlink's average performance in any geographical delivers constant quality. In suburban and rural areas, FTTx shows worse download throughput average, and achieved lowest upload throughput. Indonesia, especially West Java, still far from the ITU's target of reaching at least 5% of broadband affordability. Starlink's performances are steady in each area, but the pricing is yet to achieve West Java's income average. While FTTx, which is known for its low latency in delivering internet services, offers different packages with different prices and lower quality since the performance result shows a more varied throughput in a day. The overall result shows that the solution for dense urban areas, FTTx is more reliable than Starlink, while in rural areas, Starlink delivers better overall performance than FTTx.

Keywords: Starlink, service performance, FTTx, broadband affordability, cost-effectiveness.