

COVER LETTER

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Dear,

We wish to submit an original research article entitled “[Analysis of the Effectiveness of the Customer Base Method and Branching Method in Designing the Fiber to the Home Network]” for consideration by SINERGI.

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. We promise not to withdraw this article after it has been processed by the Editorial Team. If there is a withdrawal, we are willing to pay a penalty of USD 150 (IDR 2000K) to the SINERGI Editorial Team.

In this paper, we report on / show that:

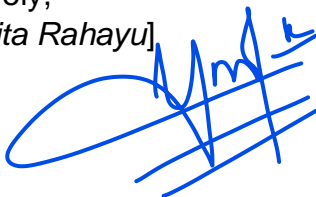
Field	:	Telecommunication
Topic	:	Fiber to The Home Network
Brief Background	:	<i>One communication medium that is well-known for its outstanding and reliable performance is fiber optic. A social example of its application is the fiber-to-the-home (FTTH) network. The goal of this study is to evaluate the customer base method and the branching method, two FTTH-building techniques based on the PT.PLN Icon Plus standards, to identify the most practical approach for use in the Air Hitam 2 cluster. Two scenarios were used in this study at the Fiber Access Terminal (FAT) with 1:8 and 1:16 splitters. The fiber optic cable path design findings demonstrate that the branching approach is a wise decision, utilizing optical fiber cables for a total of 9 km, with the greatest cable distance being 2.5 km from the Optical Line Terminal (OLT) to the end FAT. According to theory, in the 1:16 splitter situation and the 1:8 splitter scenario, the optical power received by the Optical Network Terminal (ONT) is -19.13 dBm and -16.03 dBm, respectively, with an OLT transmit power of 3 dB. For these cases, the simulation results are -17.98 dBm and -20.27 dBm. Additionally, the budget value for the rising time reaches 0.253 ns. The bit error rate values in the 1:16 and 1:8 splitter scenarios are $3,1 \times 10^{-10}$, and 11.014, respectively, while the Q factor values are 6.18233 and 11.014, respectively. Based on theory and simulation, these findings suggest that the branching strategy can deliver good performance.</i>
Research Problem	:	<i>The goal of this study is to evaluate the customer base method and the branching method, two FTTH-building techniques based on the</i>

		<i>PT. PLN Icon Plus standards, to identify the most practical approach for use in the Air Hitam 2 cluster. Two scenarios were used in this study at the Fiber Access Terminal (FAT) with 1:8 and 1:16 splitters.</i>
Overview of Method	:	<p>The Customer Base method is a method for designing the FTTH network at PT. PLN Icon Plus, where this method is ideal for covering a wide FTTH design area. In this method, the maximum limit for the total use of fiber optic cables permitted is 22 km with a maximum cable length from OLT to FAT of 7 km to ensure that FTTH development costs remain controlled within the predetermined budget.</p> <p>The Branching method used in designing the FTTH Network at PT. PLN Icon Plus is ideal for coverage areas that are not too wide and has optical power values that tend to be better when compared to the Customer Base Method. In this method, the total cable length used is not allowed to exceed 16 km, with a maximum cable length from OLT to FAT of 7 km.</p>
Significant finding	:	<p>Based on the results of the proposed research, the FTTH network design in the Air Hitam 2 cluster is more effective using the branching method, where the branching method uses 9 Km of fiber optic cable and a cable length of the furthest OLT to FAT is 2.5 Km. The power link budget obtained on the ONT with 2 scenarios does not exceed -26 dBm. The rise time budget obtained by the branching method is 0.253 ns. The Q factor value obtained in the 1:8 splitter scenario, the Q factor value is 11.014 and in the 1:16 splitter scenario, the Q factor value is 6.12833. The Bit error rate values obtained in the 1:8 splitter scenario, the bit error rate value is 1.63507×10^{-28} and in the 1:16 splitter scenario, the bit error rate value is 3.157×10^{-10}.</p>

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

Sincerely,
[Yusnita Rahayu]



AUTHORSHIP STATEMENT

We wish to submit an original research article entitled “[Analysis of the Effectiveness of the Customer Base Method and Branching Method in Designing the Fiber to the Home Network]” for consideration by SINERGI.

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

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POTENTIAL REVIEWERS

Please send 3 (three) prospective reviewers (who are not yet registered in SINERGI) to speed up the review process who are competent for the topic and have a good reputation in the field. Please ensure that **they are willing to review** this paper.

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