

Analysis of Factors (Device Limitation and Speed) Affecting the Price of Internet Package Products Using Linear Regression Method with Jamovi Tools

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The internet has evolved into a primary necessity for society, including in Indonesia, which has recorded significant growth in users. This study aims to analyze the factors influencing internet package prices, particularly speed and device limitation. The method used is multiple linear regression based on Ordinary Least Squares (OLS) with the assistance of Jamovi software, utilizing secondary data from brochures and advertisements of Internet Service Providers (ISPs) in Tajurhalang District. The analysis shows an R^2 value of 0.816 with a significant F-test ($p < 0.001$). However, only device limitation significantly affects price ($p < 0.001$), while speed does not ($p = 0.578$). A t-test also indicates a significant price difference between commercial ISPs and RT/RW Net ISPs. The conclusion emphasizes that the dominant factor determining internet package prices is device limitation, with strategic implications for ISPs in designing service packages tailored to consumer needs.

Keywords: internet package price, linear regression, device limitation, internet speed, Internet Service Provider (ISP)

I. Introduction

The internet has become a primary necessity in modern society, including in Indonesia, which has seen a significant increase in users, particularly within the productive age group. Competition among Internet Service Providers (ISPs) has driven the emergence of various packages differentiated by price, speed, quota, and device limitation. Pricing strategy is therefore crucial, balancing consumer purchasing power with provider profitability.

Previous research has examined factors of demand (Azhari & Subekti, 2023) and the implementation of local networks (Tisna et al., 2023). However, studies focusing on technical factors directly affecting prices—such as device limitation and speed—remain limited. This creates a research gap, particularly given the availability of statistical tools like Jamovi that allow practical testing of relationships between variables.

Thus, this study aims to analyze the influence of device limitation and speed on internet package prices using linear regression. Its significance lies in contributing insights for consumers to select packages suited to their needs and for ISPs to design competitive pricing strategies.

II. Literature Review

Within the framework of microeconomics, consumer utility theory explains that consumers choose combinations of goods or services that maximize satisfaction under budget constraints (Varian, 2014; Mankiw, 2020). For internet services, device limitation and speed are key attributes that shape utility. Meanwhile, pricing theory emphasizes that prices not only reflect costs but also consumer perceptions of value and product differentiation (Nagle et al., 2016; Zeithaml, 1988).

The Ordinary Least Squares (OLS) regression method is appropriate as it quantifies the impact of independent variables on price (Montgomery et al., 2012). Previous studies have applied similar models for price prediction in sectors such as stocks (Triya et al., 2024), real estate (Hadi & Benedict, 2024), and consumer goods (Gulo et al., 2023). Although the focus differs, these results demonstrate regression's effectiveness in analyzing pricing factors.

Therefore, the integration of consumer utility theory, pricing theory, and regression analysis provides a solid conceptual framework to understand the relationship between device limitation and speed with internet package prices.

III. Research Method

This research employs a quantitative approach with a descriptive-associative design. Secondary data were collected from brochures, catalogs, and advertisements of both commercial and RT/RW Net ISPs in Tajurhalang District.

The dependent variable is internet package price (Rp), while the independent variables are speed (Mbps) and device limitation (units). Analysis was conducted using multiple linear regression (OLS method) with Jamovi software, preceded by classical assumption tests to ensure model validity.

IV. Results

The analysis produced an R^2 value of 0.816, indicating that 81.6% of the variation in internet package prices is explained by device limitation and speed. The F-test yielded $p < 0.001$, signifying that both variables simultaneously influence price significantly. However, the t-test showed that only device limitation significantly affects price ($p < 0.001$), while speed does not ($p = 0.578$).

The regression equation obtained is:

$$Y = 66,100.1 + 33,206.6(\text{Device Limitation}) + 74.7(\text{Speed}) + e$$

Summary of regression results:

Variable	Coefficient	p-value	Note
Device Limitation	33,206.6	<0.001	Significant
Speed (Mbps)	74.7	0.578	Not significant

In addition, the t-test showed that commercial ISPs (average price Rp334,279) charge significantly higher than RT/RW Net ISPs (average price Rp250,194), with $p = 0.012$.

V. Conclusion and Suggestions

This study concludes that device limitation significantly influences internet package prices, while speed has no significant effect. Commercial ISPs also charge higher prices than RT/RW Net ISPs. These findings emphasize that pricing strategies in the internet industry are more influenced by device capacity than by speed attributes.

Future research should expand the scope of variables to include service quality, quota type, or promotional strategies. Broader regional coverage is also recommended to generalize findings to the national internet market.

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