

## INFORMATION TECHNOLOGY INVESTMENT BENEFIT ANALYSIS SATELLITE T3S AT PT TELKOM INDONESIA (PERSERO) TBK

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### *Abstract*

*The development of information technology in Indonesia still needs to be felt thoroughly by the public. This is due to the geographical condition of Indonesia, which consists of islands, so the optical cable network still needs to reach remote areas, especially the 3T (Outermost, frontier and disadvantaged) areas. As a result, many people need access to the internet. To overcome this, PT Telkom Indonesia (persero) Tbk invested in IT in the satellite sector. The Telkom 3S satellite will be able to help the company in reaching more users in remote areas. This study aims to find out what benefits the company gets after making satellite investments, which can later help companies in evaluating satellite investments. The method uses three methods to analyze the benefits of information technology investment: the financial statement comparison, cost-benefit, and Ranti's Generic IS / IT Business Value. Using these three methods, analysis of the benefits of technology investment resulted in Telkom 3S satellite investment bringing benefits to its finances, employees and customers.*

**Keywords:** *IT investment, financial statements, CBA, Ranti's Generic IS/IT Business Value, Telkom3S*

### 1. INTRODUCTION

Information technology is designed to make it easier for humans to complete tasks and business activities and develop the company's existence. Advances in information technology require many economic fields to innovate in decision-making business strategies and provide a competitive advantage to compete with competitors[1][2]. To achieve a competitive advantage, companies must better understand the conditions and circumstances of consumers to create loyalty or loyalty to the company. Creating loyalty can make the relationship between consumers and the company good, and the business run can last a long time compared to competitors' businesses[3][4].

One of the uses of information technology in companies is by investing in the field of information technology. Information technology investment can be used as a

reflection of companies responding to changes that occur effectively and efficiently[5]. This activity is intended as the first step in digital transformation, increasing competitive position, reducing costs, or increasing company flexibility.

PT Telkom Indonesia (Persero) Tbk, often referred to as Telkom Indonesia, is a company engaged in telecommunications and network services, the largest in Indonesia. Currently, PT Telkom Indonesia (Persero) Tbk has more than 9.4 million fixed telephone users and 171.1 million cellular network users [6][7]. However, based on data from Kominfo, the percentage of internet use for the Maluku-Papua region is around 2.49% due to the need for even interconnection in the region[8]. In response to this situation, PT Telkom Indonesia decided to invest in technology in the form of a satellite named Telkom 3S in 2017. Telkom 3S satellites are used to expand

the coverage of telecommunications services, especially in areas included in 3T (outermost, frontier, and underdeveloped), which cannot be reached using optical cables. The total investment made by PT Telkom Indonesia (Persero) Tbk is US\$ 215 million or equivalent to 2.9 trillion rupiahs, with a satellite period or active period of 15 years[9].

Measurement of the benefits of information technology investment needs to be done so that the funds that have been used get results that do not disappoint the company, so it is necessary to analyze to be able to ascertain the benefits of the decisions obtained by the company after making IT investments[10].

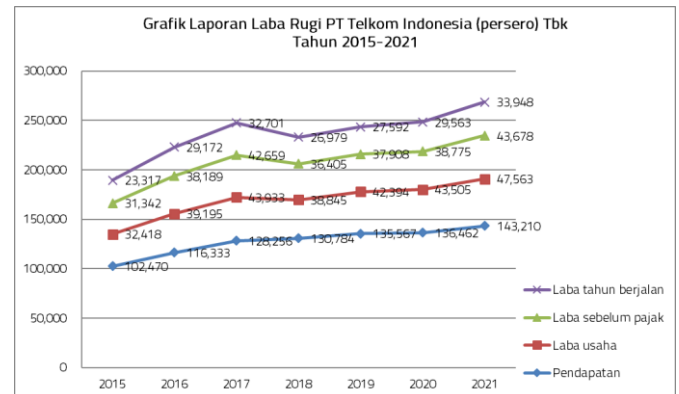
## 2. METHOD

The research method used in this study is a quantitative descriptive research method. The quantitative description method is a research method that describes systematically, factually and accurately or tries to explain phenomena in detail using numbers, starting from data collection, interpretation of data and the appearance of the results[11]. The analytical methods used in this study are comparative analysis of financial statements, cost-benefit analysis and Ranti's Generic IS / IT Business Value.

Data collection techniques in this study were carried out using documentation and literature studies. The types of data used are qualitative and quantitative data. The data sources used in this study are secondary data sources from public companies PT Telkom Indonesia (Persero) Tbk in the form of company profiles, organizational structures, annual financial reports (Annual Report) obtained through the Indonesia Stock Exchange (IDX) from 2015-2021, Telkom's official website on www.telkom.co.id and news content from official websites that already have credibility, namely Kominfo and CNN.

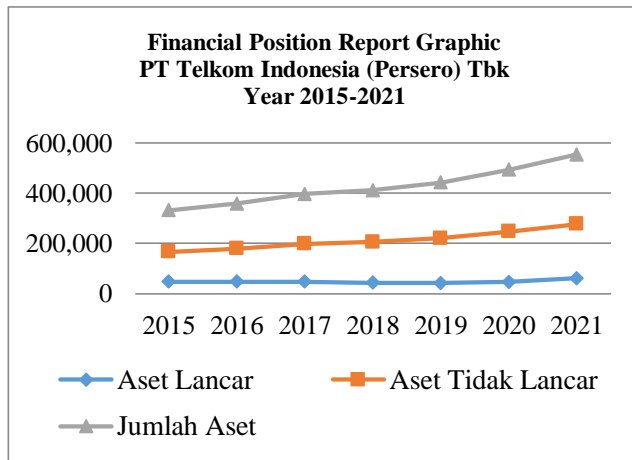
## 3. RESULT AND DISCUSSION

### 1. Financial Statement Analysis



Picture 1. Income statement chart

- In 2017, the year of infrastructure investment, the company's revenue increased by 10% and the current year's profit increased by 12% or around Rp 22.1 trillion. This increase was driven by data, internet, and information technology services revenue, which grew by 28.7%. This increase proves that the company is on the right track to becoming a "Digital Telecommunication Company".
- In 2018, there was a decrease in the amount of profit for the year by -53%, which was caused by an increase in the company's operating expenses in 2018, which was 9.8% or Rp 93.96 trillion compared to the previous year. In line with the investment in sustainable infrastructure development.
- In 2020, there was an increase in data, internet and interconnection revenue by 3,028 billion or 4% due to the high use of data during the pandemic, where all people had to switch to online and use internet services[6][12].



Picture 2. Financial position chart

- Based on picture 2, it can be seen that the company's revenue from year to year has increased, but profit before tax and net profit in 2018 decreased by -42%. This decrease was caused by an increase in operating expenses of IDR 71.6 trillion, in line with investment in broadband infrastructure development.
- In 2017, the number of fixed assets increased by 14%, related to the addition of Telkom's fixed assets, namely investment in infrastructure, including Telkom 3S satellites, backbond and radio access networks.
- There was the highest cash and cash equivalents decline of -31% in 2018. The decrease in cash and cash equivalents was due to dividend payments, capital expenditure expenditures and bank debt repayments on infrastructure investments[6][12][13].

## 2. Cost Benefit Analysis

The second method that can be used to measure & analyze the costs and benefits of information technology investment is to use of the NPV, ROI, PP and BCR calculation methods, and the calculation is as follows:

- Net Present Value (NPV)

To carry out calculations using data on the estimated cost of investments, operating costs, and estimated benefits of a planned project. This technique is carried out with a discounted cash flow technique. The following is the calculation of the Net Present Value (NPV) at PT Telkom Indonesia (Persero) Tbk:

$$NPV = \frac{C_1}{(1+r)^1} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_n}{(1+r)^n} - C_0 \quad (1)$$

$$NPV = \frac{33.007}{(1 + 0,0675)^1} + \frac{35.090}{(1 + 0,0675)^2} + \frac{35.791}{(1 + 0,0675)^3} + \frac{35.256}{(1 + 0,0675)^4} + \frac{37.703}{(1 + 0,0675)^5} - 2.869$$

$$NPV = 30.920 + 30.793 + 29.422 + 27.149 + 27.198 - 2.869$$

$$NPV = 142.612$$

Based on the calculation of Net Present Value (NPV) at PT Telkom Indonesia (Persero), Tbk obtained a result of 142,613. These results show that the value of the NPV > 0 or is positive. Thus, the information technology investments that have been made are acceptable.

- Payback Period (PP)

Calculations by this method are based on how long the value of investments can be covered with incoming cash flows. The investment cost of 2,869 (in billion rupiahs) was closed with cash per first year of 33,007 (in billion rupiahs). The calculation of this payback period is as follows:

$$PP = \frac{\text{investment amount}}{\text{net cash inflow}} \times 1 \text{ Tahun} \quad (1)$$

$$PP = \frac{2.869.605.000.000}{1.550.000.000.000} \times 1 \text{ Tahun}$$

Payback Period = 1,85  
(676/1 tahun 11 bln)

Based on the calculation of the payback period ratio above, the return time result of 1.85 (676 days / 1 year 11 months was obtained). Thus, it can be concluded that the technology investment made by PT Telkom Indonesia (Persero) Tbk requires less than 15 years (from the satellite's life).

- Return on Investment (ROI)

This method is carried out to calculate the percentage of benefits obtained by an investment compared to the costs incurred. The following is the calculation of Return On Investment (ROI) at PT Telkom Indonesia (Persero) Tbk:

$$ROI = \frac{\text{net profit after tax}}{\text{Total asset}} \times 100\% \quad (3)$$

$$ROI = \frac{32.701}{198.484} \times 100\%$$

ROI = 0,16 or 16,48%.

Based on the calculation of the Return On Investment (ROI) ratio at PT Telkom Indonesia (Persero) Tbk, it shows a value of 0.1648 or 16.48%, which illustrates that information technology investments made by the company get a profit.

- Benefit Cost Ratio (BCR)

This method is used to measure the feasibility of a project or investment profitable for the company or not. The following is the calculation of the Benefit Cost Ratio (BCR) method:

Tabel 1. BCR

Dalam miliar rupiah

Tahun	DF	PV Manfaat	PV Biaya
2017	0,936	120.146	30.252

2018	0,877	114.767	27.697
2019	0,822	111.442	28.951
2020	0,770	103.308	22.763
2021	0,721	554.749	131.096
<b>Total</b>		<b>554.749</b>	<b>131.096</b>

$$BCR = \frac{PV \text{ of benefit}}{PV \text{ of cost}} \quad (4)$$

$$BCR = \frac{554749}{131096}$$

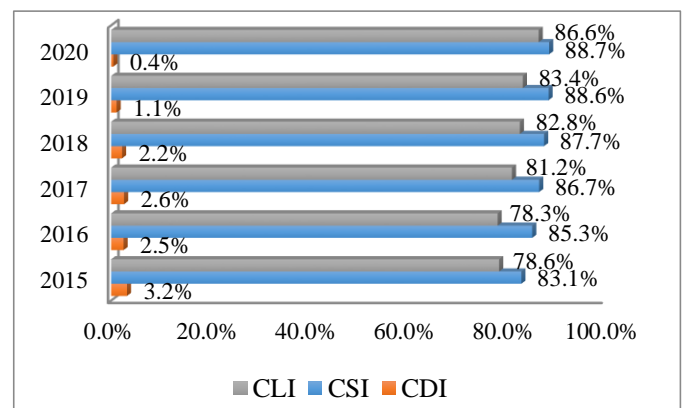
BCR = 4,23 > 1 proper

Based on the calculation of the benefit-cost ratio, a result of 4.23 was obtained, which can be concluded that the investment is feasible, looking at the BCR success indicator, namely benefit/cost > 1. Calculation with the benefit-cost ratio is used to assess whether the company will benefit from technology investments that have been made.

3. Ranti's Generic IS/IT Business Value

Ranti's Generic IS / IT Business Value method is a framework used to analyze the benefits of investments made without looking at tangible and intangible benefits that are obstacles in classifying the help of information technology investment [14][15][16]. The analysis of the benefits of investing in Telkom 3S Satellite information technology at PT Telkom Indonesia (Persero) Tbk can be seen below.

- Increase revenue caused by Increased customer trust (IRE-03)



Picture 3. Loyalty index chart

Based on the chart above, it can be seen that the CSI index and CLI increased in 2017 compared to the previous year, an increase of 2% CSI and 4% CLI. The decline in CDI from 2015-2020 shows that customer complaints can be resolved immediately by the company, so that dissatisfaction can be minimized until 2020 the CDI index is only 0.44%.

Telkom's customer loyalty level continues to increase every year, and the story of dissatisfaction continues to decline, in line with the increase in data, internet and interconnection revenues, namely 11% in 2018 to 8% in 2021.

- Reducing/reducing costs (from) equipment rental costs (RCO-13)

According to Telkom's Vice President of Corporate Communication, Mr Arief Prabowo, the Telkom 3S satellite can release the company's dependence on foreign satellite leases. In Indonesia alone, approximately 300 transponders are needed to meet communication and broadcasting needs. However, there are currently only about 140 transponders available. The presence of the Telkom 3S satellite, which carries as many as 46 transponders with the Ku-Band spectrum type, can reduce foreign satellite rentals by 46 transponders or the cost of transponder rental contracts by US \$ 1 million per year or by 15 billion / year.

- Increase Revenue (caused by) Expanding market segmentation (IRE-04)

Telkom's tagline that Telkom often says "The World in Your Hand" Telkom is committed to being able to reach urban areas as well as remote and remote areas that the internet network has not contacted. This effort cannot be separated from the use of the satellite network that has been owned, namely Telkom 3S. With the Telkom 3S Satellite, the company can reach a satellite business

market share of around 37% in 2018 and experience an increase of 7% or about 44% compared to 2019.

In the customer segment, Telkom Indonesia has significantly increased its market share in fixed broadband services. This success results from strengthening access and IT infrastructure, which can impact service quality, increased productivity and marketing strategies.

- Image Enhancing (caused by) Using well-known brands (IIM-04)

In this case, the awarding of awards or awards to PT Telkom Indonesia (Persero) Tbk by well-known institutions both nationally and internationally that already have credibility & a good reputation is the use of famous brands. With the award, the company can further prove to customers that Telkom's image/brand is perfect and has gone global. The following are the awards obtained by PT Telkom Indonesia (Persero) Tbk during satellite investment:

- Cellular Service on Satellite on The Move for Remote Area - International Asia Pacific Steive Award.
- Indonesia Digital Learning /Outstanding Social Campaign - Indonesia's Best Corporate Social Initiatives 2017.
- ASEAN Outstanding Engineering Achievement Award 2018 for completing the satellite project - ASEAN Engineer Award.
- Top 3 in Infrastructure, Utilities, and Transportation - Tempo Country Contributor Award.
- Innovative Company in Providing Technology Education Facilities - Indonesia Digital Innovation Award 2019.
- Excellence Corporate Social Responsibility Program in 2020 - Indonesian CSR Brand Equity Award 2020.

- Corporate Image Award 2021 - The Best in Building and Managing Corporate Image in the Data Communication (Satellite) category.

#### - Improving the Quality (of) Services (IQU-03)

With the presence of the Telkom 3S Satellite, Telkom was able to improve the quality of services in the form of networks and infrastructure, namely the addition of BTS as many as 31,672, so that in 2017 the total BTS owned by Telkom was 160,705 3G/4G BTS. The addition of BTS can reach around 85% of the population throughout Indonesia. The Telkom 3S satellite has also succeeded in increasing 4G LTE coverage to 490 cities and districts throughout Indonesia, especially areas previously unreachable by communication networks.

#### 4. CONCLUSION

Based on the results of the analysis, the results of the benefits of information technology investment at PT Telkom Indonesia (Persero) Tbk were obtained as follows:

##### 1. Tangible benefits

Tangible benefits obtained by the company after investing in Telkom 3S satellite information technology based on Ranti's Generic IS It Business Value method, namely an increase in revenue and a reduction/ suppression of equipment rental costs. In addition, the net present value, payback period, return on investment, and benefit-cost ratio shows that the investment made has a good profitability ratio in carrying out its business activities.

##### 2. Intangible benefits

The intangible benefits obtained by the company after investing in Telkom 3S satellite information technology are an

increase in customer trust & loyalty, expanding market segmentation and improving the company's image through improving the service quality.

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