

# Information Technology Investment Benefit Analysis Using the Cost Benefit Analysis Method and Ranti's Generic IS/IT Business Value Method

*by Ni Made Estiyanti*

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## Information Technology Investment Benefit Analysis Using the Cost Benefit Analysis Method and Ranti's Generic IS/IT Business Value Method

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### Abstract

The rapid development of technology affects society. The development of information technology affects the business world today. To overcome all this, companies need new breakthroughs by utilizing technology, namely e-commerce. Every organization or company needs to make information technology investments to be able to ensure better performance. The purpose of this study is to find out the benefits resulting from the investment in information technology in the form of online shopping applications by one fashion retail company in Indonesia, namely PT. Ramayana Lestari Sentosa Tbk. Information technology investment calculation methods used in this study are the financial statement comparison analysis method, Ranti's generic IS/IT business value method and the cost-benefit analysis method. Through calculations that have been carried out using Ranti's generic IS/IT business value method and the cost-benefit analysis method, it has been determined that the information technology investment made by Ramayana is beneficial for the company.

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### Abstrak

Perkembangan teknologi yang pesat mempengaruhi masyarakat. Perkembangan teknologi informasi mempengaruhi dunia bisnis saat ini, untuk mengatasi semua ini, perusahaan memerlukan terobosan baru dengan memanfaatkan teknologi yaitu e-commerce. Setiap organisasi atau perusahaan perlu melakukan investasi teknologi informasi untuk dapat memastikan kinerja yang lebih baik. Tujuan dilakukannya penelitian ini adalah untuk mengetahui manfaat yang dihasilkan dari dilakukannya investasi teknologi informasi berupa aplikasi belanja online oleh salah satu perusahaan fashion retail di Indonesia yaitu PT. Ramayana Lestari Sentosa Tbk. Metode perhitungan investasi teknologi informasi yang digunakan dalam penelitian ini adalah metode Analisis Perbandingan Laporan Keuangan, metode Ranti's Generic IS/IT Business Value, dan metode Cost Benefit Analysis. Melalui perhitungan yang telah dilakukan menggunakan metode Ranti's Generic IS/IT Business Value dan metode Cost Benefit Analysis, maka diperoleh hasil bahwa investasi teknologi informasi yang dilakukan Ramayana bermanfaat bagi perusahaan.

## I. INTRODUCTION

Information Technology is not unfamiliar to the people of Indonesia and even to the world. The rapid development of technology can affect people's habits, even in a company and government agencies. A computerised system is expected to provide convenience in collecting existing information (Walim and Suhardi, 2020). The technological developments that have occurred have affected the use or utilization of the internet in the business world, changed from being used only as a tool for the electronic exchange of information. Now it has been used as a tool for business strategy applications, such as marketing products or services, selling products or services, and customer service.

The rapid development of technology is a challenge for companies to continue to adapt. In addition to being a challenge for companies, technological developments

are also a challenge for people to be able to adapt well to current technological developments. The existence of technology today has removed restrictions for countries around the world in terms of disseminating information over the internet. The development of information technology greatly affects competition in the business world today, so to overcome all this, companies need to find new breakthroughs by utilizing technology.

One of the uses of information technology often used in running a business is online shopping applications, often referred to as e-commerce. E-Commerce is the process of buying and selling products or services that utilize electronic devices, such as telephones and the internet. E-Commerce is a description of buying and selling products or services on the internet or through other information networks (Estiyanti et al., 2021). The rapid growth of internet users is one of the main factors

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for companies in their efforts to market goods or services sold to consumers through existing technological developments (Anggaranie, 2017)

Every organization or company needs to invest in information technology to be able to ensure better performance in the field of information technology. Information technology investment is the decision of an organization to invest and allocate all types of resources carried out for the management of information systems in other words, information technology investment is a decision taken to increase resources in the hope that the benefits of the decision can reach the expected value (Haryanti, 2015). Optimisation of the value of information technology investment needs to be done so that the number of funds to be spent on information technology investment is not wasted. Therefore, an analysis is needed in information technology investments was carried out to be able to ascertain the benefits of these investment decisions. By conducting an analysis of information technology investment in a company, it is hoped that the analysis can find out the benefits of the application of information technology.

One of the companies that utilize this technological development is Ramayana Lestari Sentosa Tbk. In April 2018, Ramayana Department Store launched an online shopping application called Ramayana Member Card. Benefits obtained by using the Ramayana Member Card App, namely ease of transactions, and more practical shopping with points, promos and exclusive discounts specifically for members at all Ramayana merchants.

## II. RESEARCH METHODS

The data collection techniques used in this study are documentation and literature studies. The types of data used in this study are qualitative data and quantitative data. The data source used in this study is secondary data obtained through the annual report of PT. Ramayana Lestari Sentosa Tbk from 2015 to 2021.

## III. RESULTS AND DISCUSSION

### A. Research Results

Financial Statement Comparison Analysis is carried out as support in analysing Ranti's Generic IS / IT Business Value method by analyzing the results of the Financial Statement Comparison Analysis that provides benefits in accordance with the categories and sub-categories of Ranti's Generic IS / IT Business Value. Based on the company's goal of making investments, namely to improve efficiency and improve effectiveness. The purpose of technology investment in improving effectiveness is carried out by grouping and defining a series of processes within the company that can provide benefits to the company analyzed using Ranti's Generic IS / IT Business Value (Indrajit, 2012) As to improve efficiency or optimize company resources to obtain benefits both tangible and intangible. This can be analyzed using the Cost Benefit Analysis method (Indrajit, 2012).

Based on the calculations that have been carried out using three methods, the results obtained are:

#### 1. Financial Statement Comparison Analysis Method

In this method, results were obtained that showed that some company finances have increased and some have decreased in 2019. Meanwhile, in 2020 it experienced a significant decline. The company strives to be able to get through difficult times in various ways, so that in 2021 there will be some improvements although not significant.

#### 2. Ranti's Generic IS/IT Business Value Method

The results obtained in this method are in the form of benefits obtained by companies based on categories or sub-categories from Ranti's Generic IS / IT Business Value table (Darmizal and Ranti, 2016)(David Sualang and Ranti, 2009). There are five benefits of information technology investment obtained and that has been adjusted to Ranti's Generic IS/IT Business Value table, namely **Reducing/reducing Document Printing Costs and ATK (RCO-10), Increasing Productivity Due to Rapid Product Mastery (PR-02), Increasing Productivity due to Ease of Analysis (IPR-03), Improving Images Caused by Giving Discounts (IIM-02), and Avoiding Maintenance Costs (ACO-02)**

#### 3. Cost Benefit Analysis Method

In the CBA method, calculations are made regarding Return On Investment, Net Present Value, Payback Period, Benefit Cost Ratio, and Economic Value Added, whose data is obtained from the Financial Statements of PT. Ramayana Lestari Sentosa Tbk from 2015-2021. The ROI value obtained is 4.81% which means that the company's ROI can be said to be good because the value obtained is > 0. The NPV value obtained is Rp. 1,381,745, which means the investment is beneficial to the company. The amount of PP value obtained is 2,128 or 776 days which means that the investment is beneficial because the return time obtained is less than the economic benefit of the company's intangible assets, which is four years. The BCR value obtained is 1.79, which means that the investment made is beneficial because the BCR value obtained > 1. As for the EVA value of Rp.

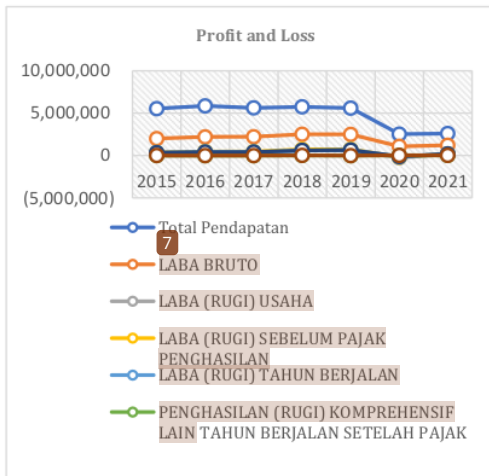
78,306, which indicates that the investment made is beneficial or profitable for the company because the EVA value obtained > 0.

**B. Discussion**

**1. Comparative Analysis of Financial Statements**

**a. Income Statement**

The following is a table of income statements from PT. Ramayana Lestari Sentosa Tbk from 2015 to 2021. The analysis method used in this study is a horizontal analysis method that aims to compare financial statements for several periods.

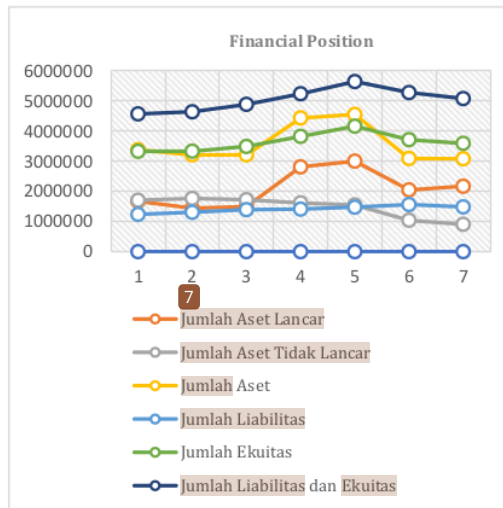


**Picture 1. Profit and Loss**

A comparative analysis of the Income Statement from 2015 to 2021 states that:

- From the comparative percentage table of profit and loss financial statements, total revenue in 2019 decreased by 2.49% due to an increase in general and administrative expenses. However, profit for the year increased by 10.35% as financial income in 2019 increased by 38.75% due to bank interest income from cash and cash equivalents (including time deposits and short-term investments)

- b. Statement of Financial Position** The following is a table of financial position statements from PT. Ramayana Lestari Sentosa Tbk from 2015 to 2021. The analysis method used in this study is a horizontal analysis method that aims to compare financial statements for several periods.



**Picture 2. Financial Position**

A comparative analysis of the Income Statement from 2015 to 2021 states that:

- In 2019, current assets increased by 6.7% from Rp. 2,817,422 in 2018 to Rp. 3,005,960 in 2019. The increase was due to an increase in cash and cash equivalents of 13.2% in 2019.
- Non-current assets in 2019 decreased by 4.3% due to a decrease in fixed assets by 4.9%.
- Liabilities increased in 2019 due to an increase in third-party accounts payable, third-party miscellaneous business debt, and employee benefits liabilities.
- Equity in 2019 experienced an increase due to the increase in the value of retained earnings not yet determined.

**2. Analysis of Ranti's Generic IS//IT Business Value**

Ranti's Generic IS /IT Business Value method is a method used to show the purpose of making information technology investments according to each category or sub-category. Benefits of information technology investment in PT. Ramayana Lestari Sentosa Tbk based on Ranti's Generic IS/IT Business Value Method can be seen in the table below:

**Table 1. Ranti's Generic IS/IT Business Value**

Code	Category	Information
RCO-10	Reducing/reducing document printing costs and ATK	The cost of printing documents and ATK has decreased due to online shopping applications that



		make many customers shop through the system.
IPR-02	Increase productivity because it is caused by rapid mastery of the product	With the training provided, employees can master the product faster and it can increase the company's productivity.
IPR-03	Increase productivity due to ease of analysis	The company provides a debriefing program that aims to improve managerial abilities to the ability to perform analysis for strategizing so that the strategy used can increase the productivity of the company.
IIM-02	Improving images caused by giving discounts	With the online shopping application, it makes it easier for people to find out the discounts provided by the company. With many discounts, the company can attract more customers.
ACO-02	Avoid maintenance costs	It can be seen that the cost of maintenance and repair in 2019 has decreased.

Ramayana Lestari Sentosa Tbk in millions of rupiah:

$$ROI = \frac{\text{Laba Bersih}}{\text{Biaya Investasi}} \times 100\% \quad (1)$$

$$ROI = \frac{587.105}{12.217.000} \times 100\%$$

$$= 0.0480563968$$

$$= 4.80\%$$

Based on the calculation of Return on Investment at PT. Ramayana Lestari Sentosa Tbk obtained an ROI value of 4.80% which means that the investment made can be accepted and provides benefits for the company because it has provided benefits of 4.80% of the total investment cost.

- **Net Present Value**

**Net Present Value** is a method used to compare all company expenses with the total company receipts at a certain interest rate. The following is the calculation of Net Present Value at PT. Ramayana Lestari Sentosa Tbk in millions of rupiah:

**Table 2. Net Present Value**

Year	Cash flow	Discount Rate
0	680.634	6%
1	516.531	
2	320.665	
3	2.228	

$$NPV = \frac{C^1}{(1+r)} + \frac{C^2}{(1+r)^2} + \frac{C^3}{(1+r)^3} - C^0 \quad (2)$$

$$= \frac{516.531}{(1+0,06)} + \frac{320.665}{(1+0,06)^2} + \frac{2.228}{(1+0,06)^3} - 680.634$$

$$= \frac{516.531}{1,06} + \frac{320.665}{1,1236} + \frac{2.228}{1,291016} - 680.634$$

$$= 487,293 + 285,390 + 1,725 - 680,634$$

$$= \text{Rp. } 93.774$$

Based on the calculation of Net Present Value at PT. Ramayana Lestari Sentosa Tbk above obtained an NPV value of Rp. 93,774 which means that the investment made can be accepted because the NPV value is > 0.

**3. Cost Benefit Analysis**

The Cost Benefit Analysis method is a process of identifying, determining, and measuring the value of elements related to information technology or investment projects that have a role in the costs that have been incurred and the benefits to be received ((Indrajit, 2016)(Campbell and Brown, 2003) The following are the results of the analysis of the Cost Benefit Analysis Method:

- **Return on Investment**

ROI is a method used in measuring the percentage of benefits obtained by a company compared to the costs incurred by the company. The following is the calculation of Return on Investment at PT.

- Payback Period

Payback Period is a time that can be measured at the time of the start of investment until the time of reaching the break event point condition which can indicate the period of return on costs or investments that have been spent in building a project. The following is the calculation of the Payback Period at PT. Ramayana Lestari Sentosa Tbk in millions of rupiah:

$$PP = \frac{\text{Jumlah Investasi}}{\text{Pendapatan}} \times 1 \text{ Tahun} \quad (3)$$

$$PP = \frac{12.217.000}{5.739.553} \times 1 \text{ Tahun}$$

$$= 2,128 \text{ (776 days)}$$

Based on the calculation of the Payback Period at PT. Ramayana Lestari Sentosa Tbk can be concluded that the investment is feasible or useful because it gets a return on investment of 2,128 or 776 days, which means that the return on investment is faster than the value or economic benefit of the company's intangible assets, which is four years.

- Benefit Cost Ratio

It is a comparison between the amount of income (benefit) and the total cost (cost). This method determines the feasibility of a project or investment, whether the project is profitable or not. The following is the calculation of the Benefit Cost Ratio at PT. Ramayana Lestari Sentosa Tbk in millions of rupiah:

Table 3. Benefit Cost Ratio

Tahun	Pendapatan	Biaya	DF	PV Manfaat	PV Biaya
2018	5.739.553	3.292.948	0,152	872.412	491.408
2019	5.996.398	3.182.317	0,095	531.658	294.720
2020	2.527.953	1.450.362	0,059	149.149	85.571
2021	2.592.682	1.382.622	0,037	95.929	51.157
<b>TOTAL</b>				<b>1.649.148</b>	<b>922.857</b>

$$BCR = \frac{PV \text{ Manfaat}}{PV \text{ Biaya}} \quad (4)$$

$$BCR = \frac{1.649.148}{922.857}$$

$$= 1,79$$

Based on the calculation of the Benefit Cost Ratio at PT. Ramayana Lestari Sentosa Tbk obtained a BCR value of 1.79 which means that the

investment made can be accepted or useful because the BCR value is > 1.

- Economic Value Added

Economic Value Added is an indicator used to measure a company's performance to measure the added value generated from an investment activity carried out by the company (Tampi and Mukuan, 2016). The following is the calculation of the Economic Value Added at PT. Ramayana Lestari Sentosa Tbk in millions of rupiah:

$$EVA = NOPAT - CAPITAL CHARGES \quad (5)$$

$$NOPAT \text{ (Net Operating After Tax)} = EBIT (1 - \text{Tax})$$

$$EBIT = \text{Current year profit} + \text{Interest expense} + \text{Tax expense} \\ = 587,105 + 21,960 + 130,067 \\ = 739,132$$

$$\text{Tax} = \frac{\text{Beban pajak}}{\text{Laba sebelum pajak}} \\ = \frac{130.067}{717.172} \\ = 0.181$$

$$1 - \text{Tax} = 1 - 0.181 = 0.819$$

$$NOPAT = \text{Rp. } 739.132 \times 0.819 = \text{Rp. } 605.349$$

$$\text{Capital Charges} = WACC \times \text{Invested Capital}$$

$$WACC \text{ (Weighted Average Cost of Capital)} = [(D \times rd) (1 - \text{Tax})] + [E \times re]$$

$$D = \frac{\text{Total hutang}}{\text{Total hutang} + \text{Total ekuitas}} \\ = \frac{1.415.582}{5.243.047} \\ = 0.270$$

$$rd = \frac{\text{Biaya bunga}}{\text{Total hutang jangka panjang}} \\ = \frac{21.960}{322.487} \\ = 0.068$$

$$E = \frac{\text{Total ekuitas}}{\text{Total hutang} + \text{Total ekuitas}} \\ = \frac{3.827.465}{5.243.047} \\ = 0.730$$

$$re = \frac{\text{Laba tahun berjalan}}{\text{Total ekuitas}} \\ = \frac{587.105}{3.827.465} \\ = 0.153$$

$$WACC = [(0.270 \times 0.068) (0.819)] + (0.730 \times 0.153)]$$

$$= [(0.018) (0.819)] + (0.112)] \\ = 0.127$$

$$\text{Invested Capital} = (\text{Total debt} + \text{Total equity}) - \text{Short-term debt}$$

$$= 5,243,047 - 1,093,095$$

$$\text{Invested Capital} = 4,149,952$$

$$\text{Capital Charges} = 0.127 \times \text{Rp. } 4.149.952 \\ = \text{IDR } 527,043$$

$$EVA = \text{Rp. } 605.349 - \text{Rp. } 527.043 \\ = \text{IDR } 78,306$$

Based on the calculation of Economic Value Added at PT. Ramayana Lestari Sentosa Tbk above obtained an EVA value of Rp. 78,306 means that the company's financial performance is in good condition because the EVA value > 0.

#### IV. CONCLUSIONS AND SUGGESTIONS

##### A. Conclusion

Based on the results obtained through the discussion in chapter IV using the Financial Statement Comparison Analysis method, Ranti's Generic IS / IT Business Value method and the Cost Benefit Analysis method, it can be concluded that:

1. Based on the Comparative Analysis of Financial Statements conducted as a supporting method in this study, results were obtained, namely the financial performance of PT. Ramayana Lestari Sentosa Tbk based on an analysis with a horizontal method on the income statement, total revenue has increased and decreased every year, a significant decrease occurred in 2020, but in 2021 the company managed to increase its total revenue. Meanwhile, in the financial position report, the number of assets, liabilities and equity until 2019 has increased, especially in 2019, which reached the highest value compared to the previous year, and in 2020 it decreased until 2021.
2. Benefits of investing in Information Technology online shopping applications at PT. Ramayana Lestari Sentosa Tbk based on Ranti's Generic IS/IT Business Value method is to Reduce Document Printing Costs and ATK (RCO-10), Increase Productivity Due to Fast Product Mastery (IPR-02), Increase Productivity due to Ease of Analysis (IPR-03), Improve Image Caused by Giving Discounts (IIM-02), and Avoid Maintenance Costs (ACO-02).
3. Benefits of investing in Information Technology online shopping applications at PT. Ramayana Lestari Sentosa Tbk based on the Cost Benefit Analysis method, obtained a Return On Investment of 4.81%, a Net Present Value of Rp. 1,381,745, Payback Period of 2,128 or 776 days, Benefit Cost Ratio of 1.79, and Economic Value Added of Rp. 78,306, which indicates that the investment made provides benefits for the company.

##### B. Suggestion

Further research can be carried out in more depth using primary data sources obtained through interviews or observations of the object of study. To more easily identify the benefits of information technology investments made. Because this research

has limitations, the financial statements were analyzed for only seven years, and the data used are secondary data obtained from the website Indonesia Stock Exchange and PT. Ramayana Lestari Sentosa Tbk.

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