Justification on Return of Capital Expenditure Between Constructing an Oceanarium and Twenty-Six Investment Alternatives From 2021 to 2026

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Abstract
Investing is an activity that aims to enlarge investors' capital through any available financial instruments. At its core, investors wish to seek profit through capital gain. For corporations, investing capital into a project requires thorough analysis. This study compares the initiative of PT Jaya Real Property to build a marine aquarium named Oceanarium with 26 distinct investment alternatives. Prices of commodities, indexes, and publicly traded stocks are taken at the same date each year, starting from 2021 to 2026. The projected cashflow was taken from a feasibility report on a proposed giant aquarium named Oceanarium which was initiated by PT Jaya Real Property. Cashflow of Oceanarium was taken from "Perubahan Kas pada Akhir Periode", leading to the yearly projected capital changes. The amount of capital needed to construct Oceanarium is Rp140,415,309,253.00 (roughly 140 billion rupiah). The finding suggests that moderate to low risk of financial instruments managed to overcome the projected cashflow of Oceanarium at the end of study period. However, a significant percentage of high-risk investment instruments yield lower return compared to the cashflow of Oceanarium. Gold and Berkshire Hathaway yield the highest return on investment. In conclusion, Oceanarium provides a safe and staple investment alternative for PT Jaya Real Property.

Keywords: Minimum Attractive Rate of Return, Return on Investment, Capital Expenditure, Financial Instruments

Abstrak
Investasi adalah kegiatan yang bertujuan menambah nilai modal seorang investor melalui beragam instrumen finansial. Secara garis besar, seorang investor memperoleh keuntungan melalui kenaikan nilai pokok. Bagi korporasi, menginvestasikan modal untuk sebuah proyek memerlukan analisa mendalam. Studi ini membandingkan inisiatif PT Jaya Real Property dalam membangun akuarium

air laut bernama Oceanarium dengan 26 opsi investasi. Proyeksi arus kas diambil dari studi kelayakan Oceanarium. Proyeksi arus kas Oceanarium diambil dari "Perubahan Kas pada Akhir Periode". Jumlah modal yang dibutuhkan untuk mengkonstruksi Oceanarium adalah Rp140,415,309,253.00 (kisaran 140 miliar rupiah). Diawali pada tahun 2021 hingga 2026, harga komoditas, indeks, dan saham diambil pada tanggal yang sama setiap tahun. Hasil studi menemukan bahwa instrumen finansial yang memiliki risiko rendah hingga menengah mampu melebihi proyeksi pendapatan pada akhir masa studi. Namun, sebagian instrumen investasi risiko tinggi menghasilkan nilai kembalian yang lebih rendah dibandingkan proyeksi pendapatan Oceanarium. Emas dan Berkshire Hathaway menghasilkan nilai pengembaian pokok tertinggi. Oleh karena itu, Oceanarium mampu menjadi opsi investasi yang aman dan stabil bagi PT Jaya Real Property.

Kata Kunci: Nilai Ketertarikan Minimum Pengembalian Pokok, Pengembalian Pokok, Pengeluaran Modal, Instrumen Finansial

INTRODUCTION

When it comes to investing, every person will naturally aim to get the best possible outcome. Meaning that no matter how big or small, many decisions had to be taken before the investment. Such investment decisions are important because they determine how capital can be allocated effectively in order to achieve the best long-term value and financial sustainability. It is no secret that investors tend to compare different forms of investments to identify opportunities that offer the best risk to return ratio. By definition, the risk to return ratio is a measure that shows the amount of possible investment return at a certain number of risks, in a certain number of time. In the current era, companies and investors are more likely to diversify their portfolio towards more liquid financial assets such as stocks, mutual funds, and cryptocurrencies compared to physical capitals (Crouzet & Eberly, 2019). However, past studies show that physical capital is actually a crucial part of economic growth. They are analyzed to be able to boost productivity, and support long-term development (Uddin et al., 2025). An example of a physical capital is infrastructure and entertainment projects. With a large potential operational cash flow and business growth, it is no doubt that infrastructure and entertainment projects can be considered as a great long-term investment.

An example of infrastructure and entertainment-based projects in Indonesia is the development of an oceanarium by PT Jaya Real Property Tbk. In a recent report, it is shown that Indonesia is the second most biodiverse country in the world (UNEP-GRID, 2022; "Fauna of Indonesia," 2019). With thousands of different marine species in Indonesia, this project was a large-scale recreational and tourism facility aimed at promoting local tourism activities. On top of that, said facility would also generate long-term economic value through operational revenue and visitor growth. According to its feasibility study report, the project requires a capital investment of about

Rp140.4 billion, and is projected to generate long-term operational cash flow through tourism and recreational activities (Jaya Property, 2021).

To decide an investment, individuals commonly evaluate its worth through several aspects, including investment knowledge, social influence, profit motivation, and risk perception (Karo et al., 2025). Newer generations of individuals are more drawn toward higher-risk investments such as stocks, cryptocurrencies, equities, and other short-term trading tools (Reshma, 2025). Studies have shown that such behaviors are heavily influenced by technological exposure and easy access to investment apps (Reshma, 2025). However, even though it may provide relatively high returns during certain periods, it is important to note that these investments are very prone to market volatility and uncertainty. Infrastructure and tourism investments may actually offer more stable long-term growth. The reason being their value is supported by operational business activities and projected cash flow generation.

This study aims to justify the economic feasibility of constructing an Oceanarium by PT Jaya Real Property Tbk. It is then compared to 23 alternative investment instruments such as Indonesian stocks, United States stocks, cryptocurrencies, government bonds, deposits, mutual funds, and natural commodities. The comparison was done by evaluating the growth of the same initial capital across the different alternatives from the year 2021 to 2026.

As a result, this study is expected to provide a deeper understanding of engineering economy decision-making. An investment feasibility should not only be marked based on its return potential, but also based on its long-term feasibility, sustainability, and market volatility exposure.

METHODS

Research Flowchart

This study utilizes a feasibility report of a marine ecotravel destination named "Oceanarium". Building Oceanarium requires significant costs. There are initial and maintenance and operational costs. For a private company whose main purpose is seeking profit, an investment decision had to be justified. Though investment justification has various methods, this research approaches the problem with comparison to 26 financial instruments. The timeframe is taken from 2021 to 2026. The main objective is to assess whether Oceanarium is capable of beating the capital gain of selected 26 financial instruments.

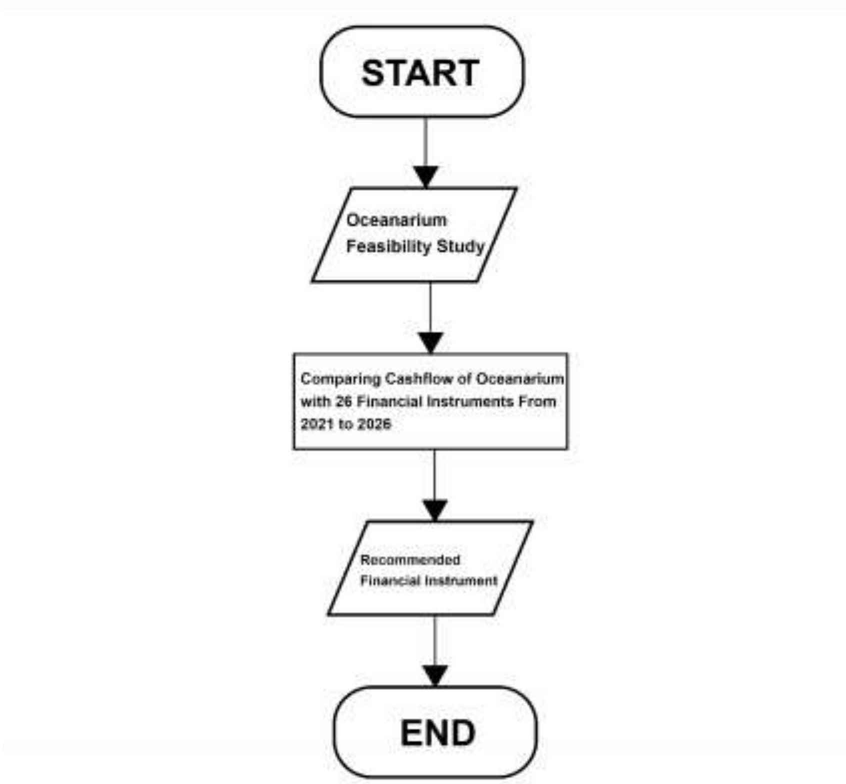

Figure 1. Research paradigm

Initial Cost of Oceanarium

Biaya Investasi		
Aquarium		84.108.315.000
Mechanical & Engineering		32.434.508.052
Biota		10.691.625.000
Pre-Operating Cost		10.000.000.000
Biaya Investasi		**137.234.448.052**
Contigency	2,50%	3.180.861.201
Total Biaya Investasi 2021-2042		**140.415.309.253**

Figure 2. Capital Expenditure breakdown

Figure above is the capital cost investment breakdown of the oceanarium by PT. JAYA. We can see the total initial investment comes out to Rp. 140,415,309,253.00 rupiah or approximately 140 billion rupiah. Investors who maintain a fish tank/aquarium at home will see nothing is out of the ordinary with the cost breakdown. While investors who never maintain one will wonder why the total cost of the biota, which is the main attraction of the oceanarium, is only 7.8% of the total initial investment cost. This approximately 140 billion rupiah will be compared against 26 other investment options. These 26 Investment options will all be given the same capital of Rp. 140,415,309,253.00. They are to be pitted against PT. JAYA performances.

Description of 26 Financial Instruments

The 26 other investments and its description are as follow:

Investment Type	Description
PT. JAYA	The main company in this study. PT. JAYA builds oceanarium in this study. (Jaya Property, 2021; BXSea, 2024)
Gold	A precious metal, usually used as a safe and long term investment choice. Also being bought and used by tech companies.
Crude oil	Raw material is used for fuel and materials. Can be processed into gasoline, diesel, plastics, etc. Backbone of logistics sector and society.
Coal	Mainly used for electricity generation. Backbone of the industrial sector. The main hero of the Industrial Revolution.
S&P 500	A stock index representing 500 large American companies across multiple industries
BRK.A	Also known as Berkshire Hathaway. Warren Buffet's golden goose. What Mona Lisa is to Da Vinci is what Berkshire Hathaway is to Warren Buffet, their masterpiece. Famous for long-term investment. Few investors know that Berkshire Hathaway started as a textile company.
AMZN	Also known as Amazon. While they are not the first, they are indeed the biggest and arguably the best e-commerce store in the world. Created by Jeff Bezos, started its humble beginnings as an online bookstore. Also famous for their cloud service.
AAPL	Also known as Apple. Known for iPhone, Mac, iPad, etc. Created by Steve Jobs and friends. Used to be famous for their innovation, now famous for their overpriced tech.
MSFT	Also known as Microsoft. Famous for their software, Windows. Microsoft also created Microsoft 365, which included: Excel, PowerPoint, Word (which the author of this paper uses), etc. Microsoft 365 is the industry standard for offices.
BBCA	Also known as Bank Central Asia. One of Indonesia's largest banks. Famous for their customer service and account security. Also a relatively stable stock.

ASII	Also known as Astra International. Most famous for their automotive sector. Also involved in finance, mining, agriculture, property, infrastructure, etc.
GGRM	Also known as Gudang Garam. Famous for their cigarettes. One of the big 3 of Indonesian cigarette.
UNVR	Also known as Unilever Indonesia. Unilever produces household items, personal care, and food products.
TLKM	Also known as Telkom Indonesia. Indonesia's largest telecommunication company.
ADRO	Also known as Adaro Energy. Adaro Energy is known for its massive coal mines and electricity production.
INCO	Also known as Vale Indonesia. A company that specializes in nickel mining and processing.
BITCOIN	The world's first and biggest decentralized cryptocurrency. Known for its high volatility that created a lot of millionaires and bankrupted a lot of people too at the same time. Created a new job called "Crypto Influencer". Has the potential to be the currency of the future.
VTSAX	Also known as Vanguard Total Stock Market Index Fund Admiral Shares. It buys almost every American stock that's available to make sure it's as diversified as possible. The diversification ensures safe and stable growth.
VFIAX	Also known as Vanguard 500 Index Fund Admiral Shares. It's a low risk, stable growth index fund that holds S&P 500 stocks.
FXAIX	Also known as Fidelity 500 Index Fund. It uses the same strategy as VFIAX and has a very similar performance to VFIAX.
Capital Fixed Income Fund	The fund mainly focuses on government bonds to create a stable and risk-free fund. The goal of this fund is to create a stable income for its holders (Makmur, 2026).
Reksa Dana Insight Renewable Energy Fund	The fund's goal is to create returns by investing in renewable and environmentally focused industries (Makmur, 2026).
Danmas Stabil	A low-risk fund with the goal of obtaining a stable income. This fund is intended for a medium to long period of investing (Makmur, 2024).

BCA/BRI Deposito	Fixed bank deposits from BCA and BRI, both having the same rate.
Mandiri/BNI Deposito	Fixed bank deposits from Mandiri and BNI, both having the same rate. The rate for Mandiri and BNI is lower than the rate for BCA and BRI.
FR 0076	Indonesian government bond that pays a fixed coupon interest. In this case, the rate is 7.375% per year.
FR 0082	Indonesian government bond that pays a fixed coupon interest. In this case, the rate is a flat 7% per year.

Table 1. List of 26 Financial Instruments

Performances

PT JAYA

Keterangan	2021	2022	2023	2024	2025	2026
Arus Kas dari aktifitas operasional						
Net Income	-	1.940.357.211	2.766.998.731	3.220.758.990	2.540.271.546	5.720.167.160
(+) Depreciation	-	1.028.316.792	10.485.591.027	10.485.591.027	10.485.591.027	10.485.591.027
(+) Amortisasi IDC	-	-	829.690.275	829.690.275	829.690.275	829.690.275
Arus Kas dari aktifitas operasional		**(331.240.419)**	**8.548.282.571**	**14.536.040.292**	**13.855.552.848**	**17.035.448.462**
Arus Kas dari aktifitas investasi						
Capex	(67.587.359.377)	(64.116.206.172)	-	-	-	-
IDC	(8.515.574.283)	(8.078.231.217)	-	-	-	-
Pemeliharaan Capex	-	-	-	-	-	-
Arus Kas dari aktifitas investasi	**(76.102.933.659)**	**(72.194.437.389)**	-	-	-	-
Arus Kas dari aktifitas pembiayaan						
Hutang Bank	47.294.750.389	44.897.745.496	(3.187.164.386)	(3.467.953.569)	(3.773.480.278)	(4.105.923.891)
Pembayaran Bunga	-	-	(331.332.325)	(360.522.702)	(392.284.752)	(426.845.039)
Pembiayaan ME Maintenance	-	-	-	-	-	-
Penambahan Modal	20.276.207.813	19.234.861.852	-	-	-	-
Arus Kas dari aktifitas pembiayaan	**67.570.958.202**	**64.132.607.347**	**(3.518.496.711)**	**(3.828.476.271)**	**(4.165.765.031)**	**(4.532.768.930)**
Perubahan Arus Kas Tahun Berjalan	(8.531.975.458)	(8.393.070.460)	**5.029.785.860**	**10.707.564.021**	**9.689.787.817**	**12.502.679.532**
Posisi Kas Pada Awal Periode	-	(8.531.975.458)	-	5.029.785.860	15.737.349.881	25.427.137.698
Posisi Kas Pada Akhir Periode	-	-	**5.029.785.860**	**15.737.349.881**	**25.427.137.698**	**37.929.817.230**

Figure 3. Cashflow of PT JAYA From 2021 to 2026

The figure above is the cash flow of PT. JAYA from the year 2021-2026. Using data from "Perubahan Kas Pada Akhir Periode" investors can see how much capital is gained or lost during the year. Through some accounting techniques, we can see that year 2021 and year 2022 PT. JAYA did not gain any money nor lose anything, as it is blank. Then in 2023, it gained around 5 billion rupiah from the starting capital. The next year, 2024, it gained another 10.7 billion rupiah, approximately. Thus, making PT. JAYA around 15.7 billion in total profit by the year 2024. We can find PT. JAYA's position in its capital using the formula below:

$$t_{year\ capital} = I + t_{year\ cashflow}$$

Where:

$$t = year\ number$$

$$I = initial\ capital = Rp140{,}415{,}309{,}253.00$$

Commodities, stocks, and funds

Investors may find how much their initial capital of around 140 billion rupiah would be if they had put it on other form of investment through a simple formula:

$$t_{year\ capital} = I\ x\ \frac{t_{year\ price\ of\ entry}}{t_{0\ year\ price\ of\ entry}}$$

Where:

$$t = year\ number$$

$$t_o = 2021$$

$$I = initial\ capital = Rp140{,}415{,}309{,}253.00$$

For the price of entry, investors may use data from the beginning of the year. In this study, the earliest data available from each year is used as the t-year price of entry. The currency in which investors price these data in does not matter as long as it is consistent for each investment type. The goal of dividing the price of entry to t-year and in 2021 is so that the currency cancels out, since investors are only looking for the ratio between the 2 prices. Investors will also not consider the currency conversion of USD to IDR from year to year to keep data uniform. The data is listed below:

Investment Type	2021	2022	2023	2024	2025	2026	Source
Gold	$1,848.30	$1,794.70	$1,865.70	$2,045.50	$2,685.60	$4,510.60	(Trading Economics, 2025)
Crude oil	$52.24	$78.44	$74.04	$73.81	$76.57	$59.12	(Trading Economics, 2025)
Coal	$87.40	$195.00	$400.00	$131.55	$113.50	$107.30	(Trading Economics, 2019)
S&P 500	$3,714.25	$4,515.54	$4,076.59	$4,845.66	$6,040.52	$6,939.02	(Trading View, n.d.)
BRK.A	$344,100.00	$469,805.00	$472,999.90	$578,019.99	$702,613.50	$722,500.00	(NYSE, 2026)

AMZN	$160.31	$149.57	$103.13	$155.20	$237.68	$239.20	(NASDAQ, 2023)
AAPL	$131.96	$174.78	$144.29	$184.40	$236.00	$259.48	(NASDAQ, 2026)
MSFT	$231.96	$310.98	$247.81	$397.58	$415.06	$430.29	(NASDAQ, 2026)
BBCA	Rp. 6,750.00	Rp. 7,625.00	Rp. 8,475.00	Rp. 9,550.00	Rp. 9,450.00	Rp. 7,400.00	(IDX, 2025)
ASII	Rp. 6,100.00	Rp. 5,475.00	Rp. 6,000.00	Rp. 5,125.00	Rp. 4,800.00	Rp. 6,350.00	(IDX, 2026)
GGRM	Rp. 37,725.00	Rp. 30,625.00	Rp. 23,000.00	Rp. 19,700.00	Rp. 11,250.00	Rp. 15,650.00	(IDX, 2026)
UNVR	Rp. 6,925.00	Rp. 4,030.00	Rp. 4,660.00	Rp. 3,100.00	Rp. 1,630.00	Rp. 1,925.00	(IDX, 2025)
TLKM	Rp. 3,110.00	Rp. 4,190.00	Rp. 3,850.00	Rp. 3,960.00	Rp. 2,660.00	Rp. 3,600.00	(IDX, 2026)
ADRO	Rp. 1,200.00	Rp. 2,240.00	Rp. 2,960.00	Rp. 2,400.00	Rp. 2,330.00	Rp. 2,210.00	(IDX, 2024)
INCO	Rp. 5,425.00	Rp. 4,640.00	Rp. 7,300.00	Rp. 3,810.00	Rp. 3,000.00	Rp. 6,450.00	(IDX, 2025)
BITCOIN	$33,141	$38,492	$23,127	$42,558	$102,412	$78,635	(Trading View, 2019)
VTSAX	$94,430.00	$110,470.00	$99,520.00	$116,780.00	$141,030.00	$165,780.00	(NASDAQ, 2026)
VFIAX	$343.060	$417.050	$376.350	$447.360	$557.850	$640.980	(NASDAQ, 2026)
FXAIX	$128,850	$156,760	$141,480	$168,270	$209,870	$241,160	(NASDAQ, 2026)
Capital Fixed Income Fund	Rp. 1,514.00	Rp. 1,580.00	Rp. 1,606.00	Rp. 1,731.00	Rp. 1,858.00	Rp. 2,029.00	(Ajaib, 2026)
Reksa Dana Insight Renewabl	Rp. 1,816.00	Rp. 1,916.00	Rp. 2,015.00	Rp. 2,133.00	Rp. 2,293.00	Rp. 2,515.00	(Ajaib, 2026)

e Energy Fund							
Danmas Stabil	Rp3,864.00	Rp4,086.00	Rp4,307.00	Rp. 4,548.00	Rp. 4,805.00	Rp. 5,147.00	(Ajaib, 2026)

Table 2. Price list of commodities, stocks, and funds

Banks and Bonds

Investors may find how much their initial capital of around 140 billion rupiah would be if they had put it on an interest-based form of investment through a simple formula. Investors need to keep in mind that these interest compounds over time. The formula is as follows:

$$t_{year} = I(1+i)^{t-t_o}$$

Where:

$$t = year\ number$$

$$I = initial\ capital = Rp. 140{,}415{,}309{,}253.00$$

$$i = interest\ rate$$

$$t_0 = 2021$$

The interest rates used in this study are listed below:

Investment Type	Interest rate	Sources
BCA/BRI Deposito	3%	(BCA, 2025; BRI, 2025)
Mandiri/BNI Deposito	2.5%	(Bank Mandiri, 2025; BNI, 2025)
FR 0076	7.375%	(KSEI, 2017)
FR 0082	7%	(KSEI, 2019)

Table 3. Interest rate of Banks and Bonds.

RESULT AND DISCUSSION

Oceanarium vs Commodities

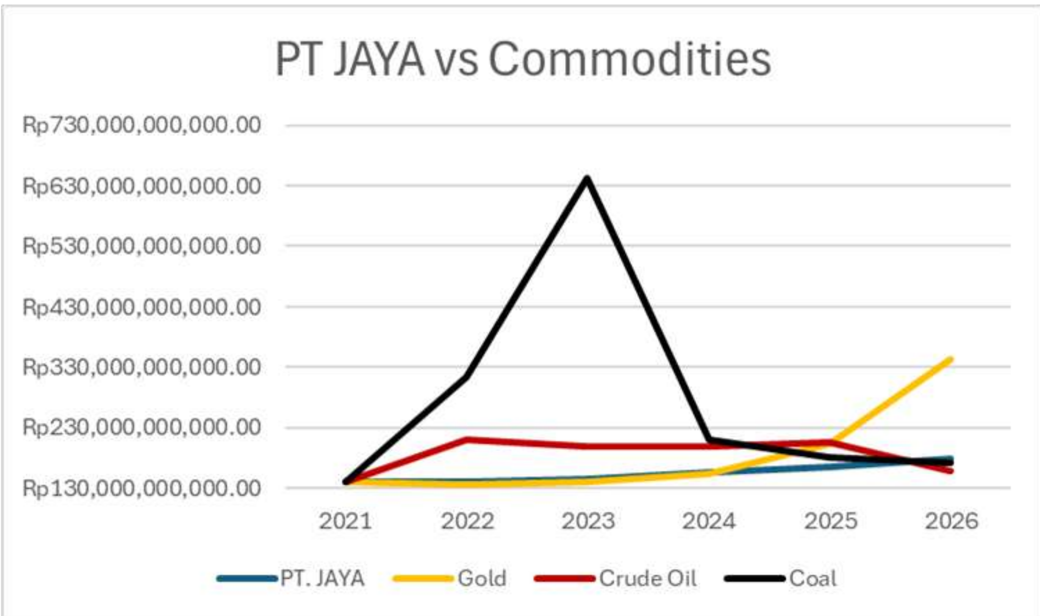

Figure 4. Price Chart Comparison of Oceanarium against Commodities

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
Gold	Rp140,415,309,253.00	Rp136,343,318,463.65	Rp141,737,186,859.99	Rp155,396,588,798.90	Rp204,024,971,341.16	Rp342,670,180,120.43
Crude oil	Rp140,415,309,253.00	Rp210,837,994,980.96	Rp199,011,284,400.69	Rp198,393,069,984.00	Rp205,811,642,984.35	Rp158,907,983,978.51
Coal	Rp140,415,309,253.00	Rp313,283,584,717.79	Rp642,632,994,292.91	Rp211,345,925,998.08	Rp182,347,112,130.61	Rp172,386,300,719.07

Table 4. Comparison of Oceanarium against Commodities

PT JAYA shows a more stable and the safest growth. Although gold grew slowly at the start, around the same rate as PT JAYA, in 2025 it spiked up due to geopolitical issues, especially between the US and China (Riefky et al., 2025), if a person invests around 140 billion rupiah in gold in 2021, their gold asset would increase 144% to around 342 billion rupiah by 2026. Crude oil grew in 2022 and kept its relative price during 2022-2025, then in 2026 its price dropped. Keep in mind that this research took data from the beginning of each year, so the crude oil price spike in 2026 that happens later in the year is not recorded. Coal is a very volatile commodity to invest to:

a person investing around 140 billion rupiah in 2021 would have netted around 502 billion in profit in 2 years, however if the same person invests around 642 billion rupiah in 2023, they would have netted around 431 billion in losses in just 1 year. This shows that investing in coal has a high risk and a high reward potential in this 5-year span. Commodities prices are prone to jump and fall due to global events and conflicts, while PT Jaya is not as affected by anything that happens outside of Indonesia. This data shows that even though investing in crude oil and coal will give higher peaks in investment gains, they are also more volatile; by the end of this 5-year span, investing in PT Jaya will yield more profit and give the investor a better sense of security.

Oceanarium vs American Stock Market

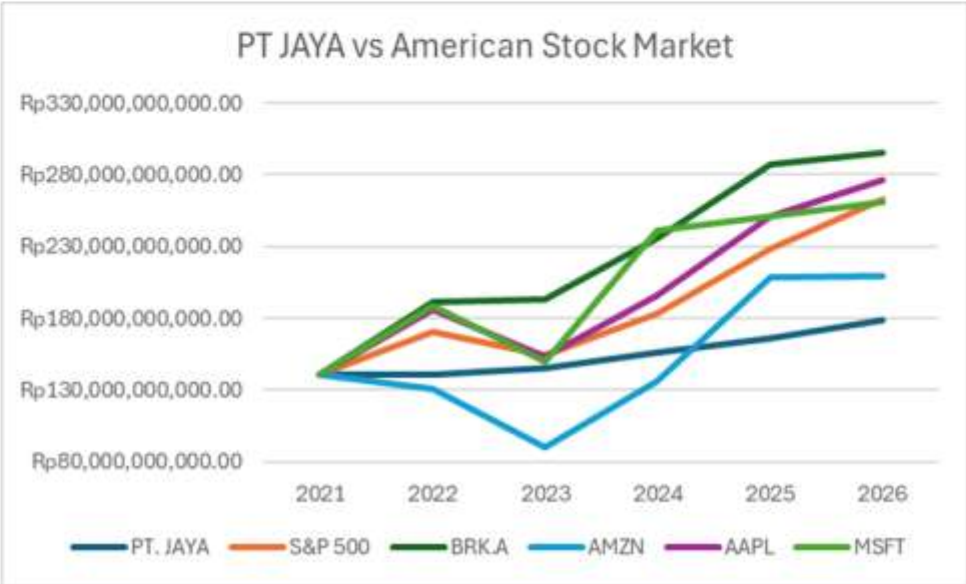

Figure 5. Price Chart Comparison of Oceanarium against American Stock Market

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
S&P 500	Rp140,415,309,253.00	Rp170,707,665,220.24	Rp154,113,386,430.02	Rp183,187,681,883.26	Rp228,358,749,101.15	Rp262,326,079,077.27
BRK.A	Rp140,415,309,253.00	Rp191,711,172,227.86	Rp193,014,900,421.79	Rp235,869,967,016.18	Rp286,712,269,363.07	Rp294,827,262,235.67
AMZN	Rp140,415,309,253.00	Rp131,008,157,974.99	Rp90,331,425,633.22	RP135,939,467,257.60	Rp208,183,586,197.08	Rp209,514,952,113.52

AAPL	Rp140,415,309,253.00	Rp185,978,991,749.31	Rp153,535,351,410.39	Rp196,215,391,226.53	Rp251,121,650,376.69	Rp276,106,126,439.59
MSFT	Rp140,415,309,253.00	Rp188,249,495,048.71	Rp150,009,992,179.63	Rp240,672,179,051.59	Rp251,253,570,695.60	Rp260,472,941,103.96

Table 5. Comparison of Oceanarium against Commodities

S&P 500 is a very balanced investment type, its growth and performance are generally in the middle of the pack. BRK.A, Warren Buffet's golden goose, has the best performance and the safest growth in this 5-year span. Its no surprise considering the company's track record and history as a safe growth stock company. While most companies in the US stock market dipped in 2023, BRK.A stays consistent and their stocks keep going up. While AMZN stock dips during the year 2022 and 2023, they recovered and went on to outperform PT JAYA. AAPL and MSFT have similar performances, except during the year 2024 where MSFT outperforms AAPL and in 2025 where AAPL regains momentum to catch up with MSFT, and both outperforms PT JAYA significantly. It can be seen that the American stock market outperforms PT Jaya by quite a margin. Investors can earn 47% more by turning their brain off and just investing in S&P 500 and not worrying about a thing since even if 10 companies go bankrupt, there are still 490 more in the index. While PT JAYA investors will be more worried about the company and earn less profit at the same time. However, American and Indonesian economies have different growth so naturally, all Indonesian based investment will yield a lower return on average. Geopolitically, Indonesia is more neutral than the United States, therefore by investing in PT JAYA, while yielding less profits, will be safer in years to come rather than the United States stock market due to the rising geopolitical tension. Investors in 2026 that value stability and safety will invest in PT JAYA due to the current geopolitical situation in the year.

Oceanarium vs Indonesian Stock Market

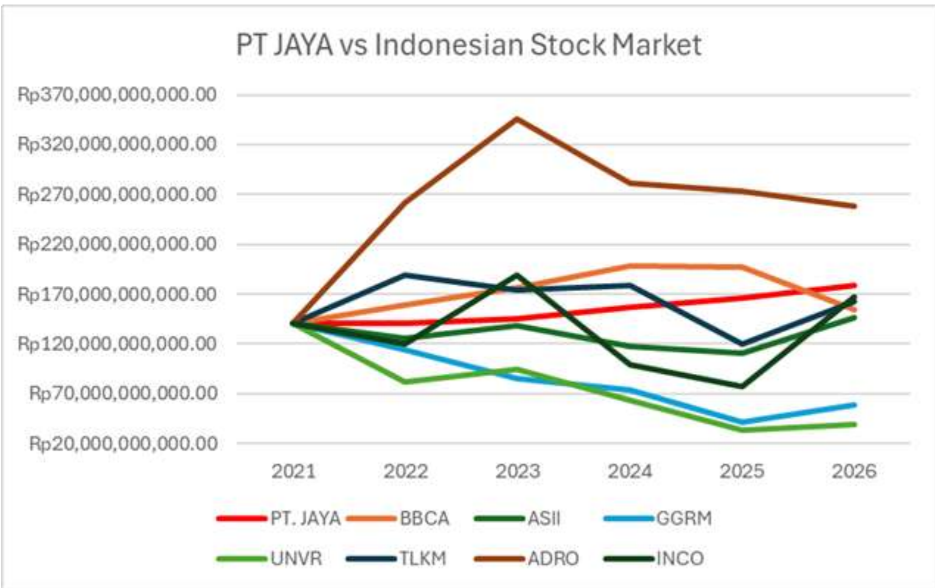

Figure 6. Price Chart Comparison of Oceanarium against Indonesian Stock Market

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
BBCA	Rp140,415,309,253.00	Rp158,617,293,785.80	Rp176,299,221,617.66	Rp198,661,659,757.95	Rp196,581,432,954.20	Rp153,936,783,477.36
ASII	Rp140,415,309,253.00	Rp126,028,494,780.36	Rp138,113,418,937.38	Rp117,971,878,675.68	Rp110,490,735,149.90	Rp146,170,035,042.06
GGRM	Rp140,415,309,253.00	Rp113,988,571,129.84	Rp85,607,743,215.88	Rp73,324,893,102.30	Rp41,873,352,659.94	Rp58,250,486,144.72
UNVR	Rp140,415,309,253.00	Rp81,714,613,182.61	Rp94,488,857,923.32	Rp62,857,394,755.86	Rp33,050,823,694.21	Rp39,032,414,485.49
TLKM	Rp140,415,309,253.00	Rp189,176,895,746.00	Rp173,826,025,924.13	Rp178,792,483,807.68	Rp120,097,981,547.58	Rp162,538,621,643.34
ADRO	Rp140,415,309,253.00	Rp262,108,577,272.27	Rp346,357,762,824.07	Rp280,830,618,506.00	Rp272,639,725,466.24	Rp258,598,194,540.94
INCO	Rp140,415,309,253.00	Rp120,097,149,296.58	Rp188,945,946,091.59	Rp98,614,254,056.02	Rp77,649,018,941.75	Rp166,945,390,724.77

Table 6. Comparison of Oceanarium against Indonesian Stock Market

BBCA shows a strong growth until 2024, then it starts to decline and finishes the 5-years span with less than 10% profit margin. An investor putting around 140 billion rupiah in BBCA in 2021, will only gain 13 billion rupiah in profit in 2026; even though the same investor once had a 58 billion rupiah in profit if they had cashed out in 2023. Even though BBCA performance seems to be bad, if we compare it to other popular stocks in the Indonesian stock market, BBCA seems to have a pretty decent performance compared to other stocks. An investor investing in ASII in 2021 will always have a net negative until the year 2026, and after years of holding onto their stock, they will only gain a measly 4% profit after 5 years; which means that investors will gain less than 1 percent each year on average. GGRM investors are either unlucky or unintelligent, the stock keeps going down since 2021; in this 5-year span an investor putting around 140 billion rupiah will lose around 99 billion rupiah at its lowest point and will lose around 82 billion rupiah by the end of the period. UNVR stock somehow performs worse than GGRM; any investor unlucky enough to invest in 2021 will have to say goodbye to 76% of their asset by 2025. TLKM grew for a year and then continued to gradually dip until it rebounded in 2026 and give investors who invested in 2021 a solid 15% profit. ADRO is a very solid stock to invest in, it grew rapidly from 2021 to 2023, then it declined until 2026. Even though it has been declining since 2024, it's still a very solid stock since investors who invested around 140 billion rupiah in 2021 will still net a good 118 billion rupiah, give or take, by 2026. Even though INCO at its lowest point in the 5-year span dips lower than TLKM, ASII, and BBCA, it still enters 2026 stronger than all of them. PT JAYA showed the most consistent stock growth and the 2nd best performance out of the 8 investment types above. It is a very easy decision not to have to worry about the stock market and somehow bring home a better gain than a lot of the classic solid-performer stocks from IHSG; therefore, PT JAYA is a better alternative than a lot of the Indonesian stock market choices.

Oceanarium vs BITCOIN

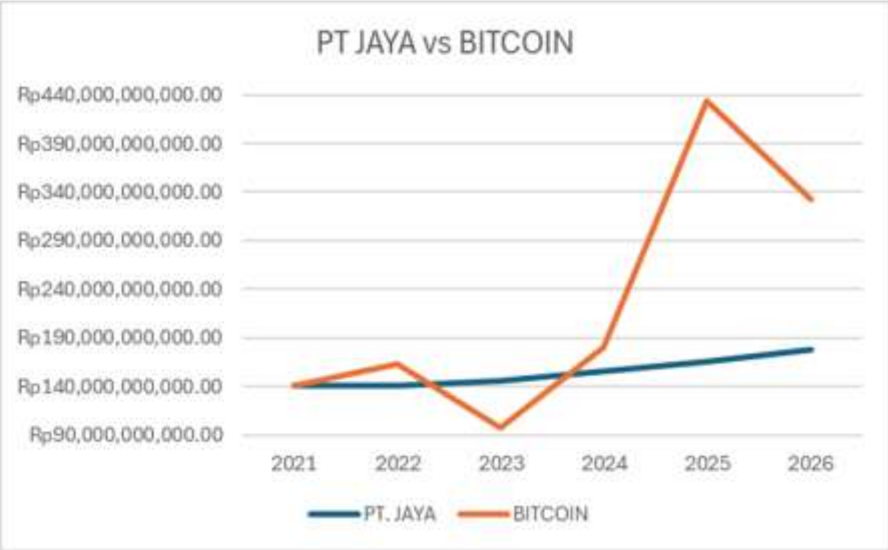

Figure 7. Price Chart Comparison of Oceanarium against Bitcoin

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
BITCOIN	Rp140,415,309,253.00	Rp163,086,994,471.09	Rp97,986,930,300.66	Rp180,314,255,188.11	Rp433,910,040,470.06	Rp333,169,121,122.17

Table 7. Comparison of Oceanarium against Bitcoin

A bitcoin investor may gain around 140% in a single year or lose around 40% within a year. Bitcoin is a very volatile investment. Its good for investors with a lot of capital to risk, however, it's bad for investors who want a safe and stable investment. This is not the investment type for investors who don’t want to lose 40% of their investment in a single year. PT JAYA is that safe and stable investment compared to Bitcoin.

Oceanarium vs American Index Mutual Funds

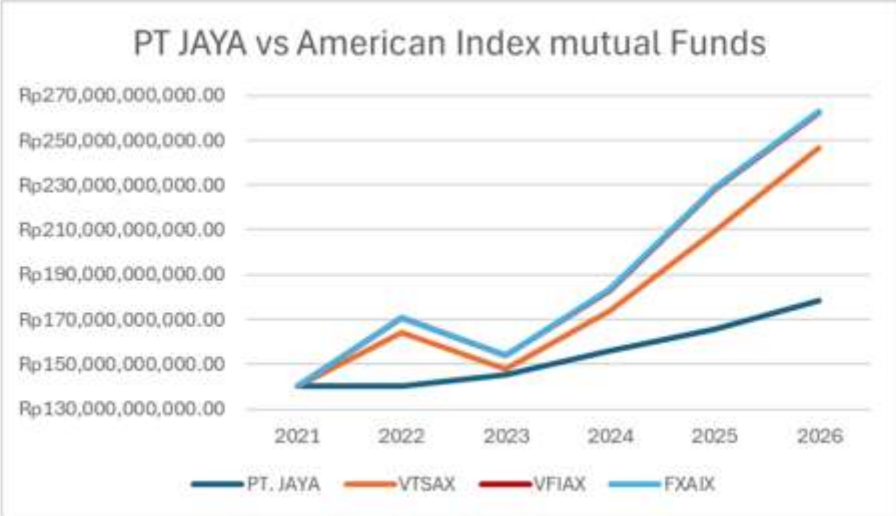

Figure 8. Price Chart Comparison of Oceanarium against American Indeks Mutual Funds

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
VTSAX	Rp140,415,309,253.00	Rp164,266,432,417.44	Rp147,984,026,017.78	Rp173,649,262,041.36	Rp209,708,472,561.16	Rp246,511,171,957.67
VFIAX	Rp140,415,309,253.00	Rp170,699,599,848.32	Rp154,040,988,857.25	Rp183,105,558,058.13	Rp228,329,389,222.84	Rp262,354,704,497.72
FXAIX	Rp140,415,309,253.00	Rp170,830,453,073.34	Rp154,178,951,906.20	Rp183,373,566,845.19	Rp228,707,496,724.31	Rp262,806,022,347.33

Table 8. Comparison of Oceanarium against American Index Mutual Funds

VFIAX and FXIAX index mutual funds perform very similarly, it's the reason we can barely see VFIAX on the graph. Upon closer inspection, it is due to both index mutual funds investing in the same thing: S&P 500. Therefore, both index mutual funds are bound to perform a similar, but slightly different, solid performance. Both index mutual funds yield a solid 87%, approximately, after a 5-year span. VTSAX performs slightly worse than both VFIAX and FXIAX, at a slightly less, but still good 75% give or take. Even though investment in PT JAYA performs worse than these 3 American index mutual funds, it still is the most stable and safe investment out of the 4. All of 3 American index mutual funds examples dips roughly 10% in 2023, so an investor entering in 2022 would lose 10% of their capital; however, an investor investing in PT JAYA will gain a small profit, which is better than a loss.

Oceanarium vs Indonesian Mutual Funds

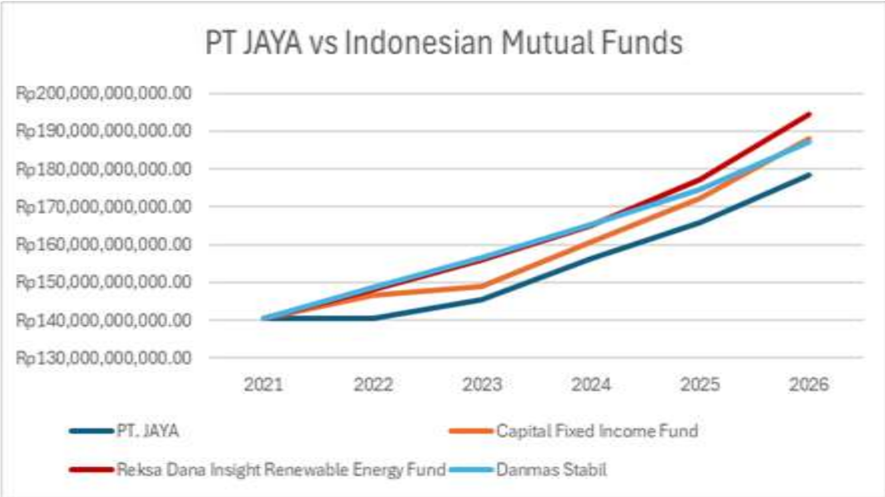

Figure 9. Price Chart Comparison of Oceanarium against Indonesian Mutual Funds

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
Capital Fixed Income Fund	Rp140,415,309,253.00	Rp164,266,432,417.44	Rp147,984,026,017.78	Rp173,649,262,041.36	Rp209,708,472,561.16	Rp246,511,171,957.67
Reksa Dana Insight Renewable Energy Fund	Rp140,415,309,253.00	Rp170,699,599,848.32	Rp154,040,988,857.25	Rp183,105,558,058.13	Rp228,329,389,222.84	Rp262,354,704,497.72
Danmas Stabil	Rp140,415,309,253.00	Rp170,830,453,073.34	Rp154,178,951,906.20	Rp183,373,566,845.19	Rp228,707,496,724.31	Rp262,806,022,347.33

Table 9. Comparison of Oceanarium against Indonesian Mutual Funds

All 3 examples of Indonesian mutual funds perform similarly, as stable and safe investment funds. These mutual funds perform better than PT JAYA. Capital Fixed Income Fund gains around 34% after a 5-year span. Reksa Dana Insight Renewable Energy Fund gained around 38.5% , a better performance than Capital Fixed Income Fund. The worst of the 3, Danmas Stabil, still gained a good 33.5% profit approximately. Even the Danmas Stabil, while having a lesser performance than the other 2 examples, still performs better than PT JAYA which gains around 27% in a 5-year span. There is no justification for PT JAYA against Indonesian mutual funds in the 5-year span; however, we may see the justification for PT JAYA by 2031 for the 10-year span comparison against Indonesian mutual funds.

Oceanarium vs Indonesian Banks Deposit

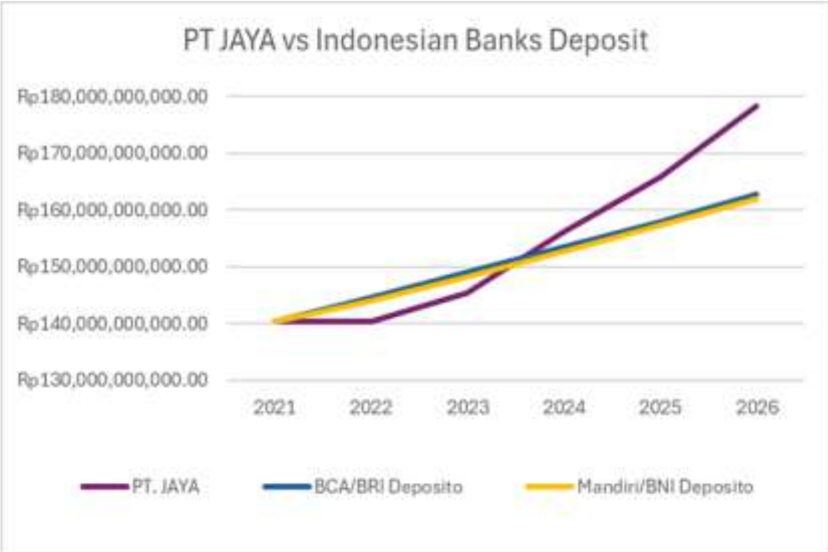

Figure 10. Price Chart Comparison of Oceanarium against Indonesian Banks Deposit

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
BCA/BRI Deposito	Rp140,415,309,253.00	Rp144,627,768,530.59	Rp148,966,601,586.51	Rp153,435,599,634.10	Rp158,038,667,623.13	Rp162,779,827,651.82
Mandiri/BNI Deposito	Rp140,415,309,253.00	Rp143,925,691,984.33	Rp148,243,462,743.86	Rp152,690,766,626.17	Rp157,271,489,624.96	Rp161,989,634,313.70

Table 10. Comparison of Oceanarium against Indonesian Banks Deposit

While banks have fixed rates, which yields a perfectly stable income and virtually no risk (unless the bank dissolves); therefore, making it a very safe investment type. However, bank deposit investment has 1 problem, they grow too slowly. Bank deposits either very slightly outperform inflation or they fail to catch up to inflation. BCA and BRI deposits have an interest rate of 3% per year for our investment of more than 140 billion rupiah and 5-year span. While under the same conditions, Mandiri and BNI deposits yields an even lower 2.5% interest rate. After 5 years, both rates will yield 15.93% and 13.14% respectively, which is still lower than PT JAYA's 27 percent. PT JAYA, while in theory is more unsafe than banks, in practice is as safe as bank deposits; even though it may not be as consistent. Investing in PT JAYA will yield better returns, and based on the 5-year track record, it is as safe as bank deposits.

Oceanarium vs Indonesian Government Bonds

Figure 11. Price Chart Comparison of Oceanarium against Indonesian Government Bonds

Investment Type	2021	2022	2023	2024	2025	2026
PT. JAYA	Rp140,415,309,253.00	Rp140,415,309,253.00	Rp145,445,095,113.00	Rp156,152,659,134.00	Rp165,842,446,951.00	Rp178,345,126,483.00
FR 0076	Rp140,415,309,253.00	Rp150,770,938,310.41	Rp161,890,295,010.80	Rp173,829,704,267.85	Rp186,649,644,957.60	Rp200,415,056,273.23
FR 0082	Rp140,415,309,253.00	Rp150,244,380,900.71	Rp160,761,487,563.76	Rp172,014,791,693.22	Rp184,055,827,111.75	Rp196,939,735,009.57

Table 11. Comparison of Oceanarium against Indonesian Government Bonds

If banks have virtually no risk, then government bonds have practically no risk at all, unless the country dissolves; which is very rare being the last time it happened was in 2006 (BBC News, 2006). FR 0076 yields 7.375% per year, which is a very good investment considering there is no risk. FR 0082 performs slightly worse at 7% a year, which is still very solid. Both of these Indonesian government bonds perform a lot better than PT JAYA, while also being a lot safer at the same time. Unfortunately, PT JAYA has no justification against government bonds in a 5-year span. By

2031 we may or may not see a justification for PT JAYA for a 10-year span against Indonesian Government Bonds, given the good rates of government bonds.

CONCLUSION

Investing in Oceanarium is profitable for PT Jaya Real Property. For a company whose main business revolves around increasing the value of land, building a marine ecosystem targeted for visitors is a sound diversification business strategy. However, the study finds that PT Jaya Real Property could gain higher returns on investing its capital in financial markets. Financial markets offer varying risks and returns for investors. Gold and Berkshire Hathaway offer the highest return on investment within the span of five years. While a stock ticker named GGRM yields the lowest return on investment, even lowered compared to the amount of principal. Between investing the capital into Oceanarium and an Indonesian mutual fund slightly different, signifying that Oceanarium could be perceived as a stable investment instrument for PT Jaya Real Property.

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