

Faculty of Business and Management

FINANCIAL MANAGEMENT

Case Study: Report on Financial Analysis

British Petroleum (BP) plc

Assessment

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Executive Summary

British Petroleum (BP) albeit a significant supporter of the world economy in the earlier year of its activity has made a genuine and heartbreaking natural effect. BP looks for excellence, not well-being. The individuals working inside realized that they are fouling up yet didn't stop until the debacle run over them (Borozan et al., 2020). Their demonstration has incredible to pay for each living being on the planet. Government ought to make such condition such measure which stand everybody to work in an appropriate and authentic manner. Adhere to the guidelines and bound. Put the wellbeing measure first. Give preparing and advancement program to its staff. Make a sensible working condition. Generally, make a solid workplace (Kamaluddin et al., 2019). Organisation can cost the slice to make benefit, however not cost to cost the general public and its encompassing. This work analysis the financial ratios of British Petroleum plc for the last five years. The financial condition of BP along the strategic analysis of market and core competitors. This report also highlights the payback period, NPV and IRR advantages and drawbacks.

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Introduction

British petroleum turned into firstly created with the aid of a German company as a way of advertising its products in Britain. British petroleum began 1908 in a rugged part of Persia and has had a variety of oil and gasoline in the proverbial pipeline, which include discoveries from BP plc's very own study facilities. British petroleum is one of the leading electricity agency in the world, imparting its clients with gasoline for transport, electricity for heating and mild, retail offerings and petrochemical products for normal gadgets (Gambelli et al., 2017). BP is the world's 2nd largest oil company by means of marketplace price.

BP had grown to emerge as an international power business enterprise, presenting massive portions of oil on the identical time as also making strides along a promising direction inside the route of oil's options. British petroleum charge income as at year stop 2009 emerge as 14 million, and reserves at 18. 3billion barrels of oil. Its exploration and refines entirely and in part owned are located in 30 countries. BP is the world's 2nd largest oil company by means of marketplace price. The headquarters is in London (Wicaksono et al., 2019). The business enterprise operates on six continents and gives products and services in eighty international locations. Within the past, the corporation has managed to triumph over all terrible photographs through wonderful action and sustainable efforts for sustainable improvement after facing environmental and protection troubles in its operations.

It's a big challenge with difficult global conditions and extreme weather conditions in different parts of the world. BP aims to reduce the environmental impact through sophisticated risk assessment techniques and the development of a systematic and disciplined approach to its business. They also help with business plans so that BP can integrate EMS into a group-level operating system that enables BP to prioritise activities based on key risk assessments, including environmental and social performance.

Recent oil spills have led to a negative increase in the Alaska pipeline and the Texas Refining Company's worldwide reputation (Abubakar et al., 2016). BP aims to pursue new possibilities to fulfil an evolving generation, customer and policy tendencies. British petroleum is constructing up our renewable electricity portfolio – with sports activities spanning renewable fuels and merchandise, wind and solar power and biopower. BP percent artwork across a couple of fronts via our investments in low carbon activities with joint ventures, collaborations and new

enterprise models. Through BP ventures we've invested extra than \$650 million in round forty agencies since it turned into installation in 2007. BP % investments in resource technologies and innovations that we agree with may want to advantage BP and international power structures.

BP currently has four main competitors: Royal Dutch Shell, Chevron, Total SA and Exxon Mobil. ExxonMobil uses the best technologies to manage its portfolio of high-quality manufacturing assets and constantly improves its workforce in a high-performance environment across the company, leading to a sound financial position, ensuring resource availability. Total S.A. has a good operating experience in extremely cold conditions and meets the economic, technical and environmental challenges associated with Canada and Venezuela, which have extensive reserves. Shell is more focused on long-term strategic thinking, spanning 20 years on the horizon. This is much more than the 4 or 5-year plan in which most companies participate (Gambelli et al., 2017). Chevron is one of the main competitors that it has successfully explored among its other players and has the lowest unit financing costs of its group.

Financial Ratios Analysis for the last five years

Profitability Ratios

Profitability ratio seeks to measure a company's overall financial performance by estimating, among other things, its ability to generate revenue in addition after extra service costs. In addition to net profit margin, at least four profitability metrics are required (Mohagheghi et al., 2017). These ratios are performance indicators in addition to the return on capital. With provisions and other data, the future in addition to the security and future viability, which will pay and repay the loan and the debts, plus interest: shares and dividend is divided in stocks, earnings per share is an option to distribute the dividend.

However, various elements can be used to assess profitability. For example, a financial analyst may use the return on investment or cost of service as an estimate of profitability. If the element used is neglected, these percentages can count as mutual prosperity between competitors and companies. It is also important to measure the performance of a company over time to evaluate its performance. Profitability measures are important to many professionals, for example. professionals like managers, bankers, stock analysts who use metrics to improve analytics.

Gross Profit Margin

Gross profit margin demonstrates companies produce or provides products and services efficiently. It shows how good the prices of the products are, considering the variable costs involved in their construction or delivery. As a result, the higher the gross margin, the higher the premium that a retail company imposes on its products or services. If the gross profit is high, the company can pay the cost and save money. In other words, divide the net profit by the profit. The detail of each sales order described can be managed as a profit (Gambelli et al., 2017). The high expected profit margin for colleagues in this sector shows that the company has several competitive advantages over its competitors that make better use of costs, proprietary knowledge and brand recognition.

Although this is a good sign, It is important for a person analysing the guidelines to demonstrate that an organisation in this sector has a primarily sustainable competitive advantage. Another important trend is the accumulated profit, which creates a competitive business environment for the company. Profit margins can also be used to assess whether increased profits are beneficial to companies in the industry (Mohagheghi et al., 2017). The growth in profit margin associated with declining earnings shows that the company's earnings growth is not stable.

Net profit margin

It retains the after-tax profit on annual sales. In other words, the higher the net profit margin, the more efficient the business is in this sector. The higher the percentage, the better the business with operating costs. Because profit margins vary from sector to sector, net profit can also be used to assess companies in the same region or industry. It can also be used to show the profitability of an industrial company over time by comparing actual profit margins with the most recent figures. The value of all sales proceeds will eventually be available to withdraw from work or pay dividends.

For the year 2019	For the year 2018	For the year 2017	For the year 2016	For the year 2015
4025	9382	3388	114	6,484
250,897	270,689	219,853	33,188	43,235
0.01604244	0.034659702	0.015410297	0.003434976	0.149971088

Liquidity Ratio

The liquidity ratio evaluates a company's ability to transfer its short-term assets and liabilities immediately (Bretherick, 2016). This is one of the important criteria for planning and monitoring current assets and short-term liabilities. Cash is one of the most liquid assets compared to fixed assets. When analysing a company's financial position, one must first assess the company's liquidity ratio. “Company’s liquidity ratio as it could be bankrupt (possibly due to poor management)”. Current indicators and the liquidity index are the most widely used liquidity indicators. However, there is another aspect to better understand the solvency of the company towards third parties for instance cash cycle, working capital, accounts receivable, inventories and short-term liabilities. In addition to the liquidity ratio, a company could also assess her solvency via inventory as it could be used to sold to repay debts. Financial analysts often use specific money ratios. Current and accelerated key figures that allow cross-sectional time or a comparison between the company or other industries.

Current Ratio

For the year 2019	For the year 2018	For the year 2017	For the year 2016	For the year 2015
135	164	303	537	1,062
18,007	14,665	7,903	4,225	212
0.007497084	0.011183089	0.038339871	0.127100592	5.009433962

The current ratio measure is a liquidity measure that measures a company's short-term liabilities or its ability to complete a year. It shows investors and analysts how companies can maximise short-term assets on their balance sheets to pay off their debts and other short-term liabilities (British Petroleum plc, 2017). This is a good financial situation for companies, which means that your short-term debts can be repaid without stress. If the current rate is less than 1.00 times, the company will struggle to cover its monthly bills. The current high rate is generally better than the current low rate when it comes to maintaining liquidity.

Gearing

The ratio measures a company's financial indebtedness, i.e. the sum of the liabilities in which it is interested in capital formation. Debt is generally calculated by dividing total debt by equity. The company must balance equity participation and debt in capital formation (Bawa et al., 2019). As per Modigliani & Miller, adding

debt to the capital structure increases the return on investment because there is an interest tax label, which means that interest income for tax purposes is reduced and interest expense is reduced (Arkan, 2016). However, increasing debt increases the risk of bankruptcy and puts the company at risk with financial losses. Companies are trying to determine the correct capital structure, which means that the capital ratio reduces the weighted average cost of capital.

Debt to Capital Ratio

$$\text{Debt to Capital Ratio} = \frac{D}{D + E}$$

For the year 2019	For the year 2018	For the year 2017	For the year 2016	For the year 2015
52,429	48,556	43,565	39,055	8,057
123,321	125,952	129,475	131,244	134,762
0.425142514	0.385511941	0.336474223	0.297575508	0.059786884

The debt ratio (d / e) is calculated by dividing the company's general liabilities by using equity. These figures are to be had inside the agency's annual balance sheet. This dating is used to estimate the organization's leverage (Byers, 2017). The maximum critical degree of company finance is the d / e ratio. It's far a measure of the amount the employer budget with debt as opposed to a hundred% cash. Particularly, it displays the ability of equity to pay off all money owed in the occasion of an operational slowdown. Every region has one-of-a-kind loan proposals, as a few sectors use extra debt than others. A ratio of 0, Five manner less liability than equity. In other words, 2 to one of the employer's belongings are financed by using the creditors of the traders. Buyers have sixty-six. 6 cents for each dollar of corporate assets, even as creditors only have 33. Three cents, according to greenback. The ratio 1 method that buyers and lenders share inside the business enterprise's assets similarly. In well-known, a low debt ratio implies more financially strong pastime. Groups with higher debt ratios are riskier for creditors and investors than corporations with lower debt ratios. In comparison to equity financing, the loan must be repaid to the lender. On the grounds that debt financing also requires debt provider or ordinary hobby bills, debt may be a greater steeply-priced shape of financing than equity financing. Large banks won't be able to make bills.

Efficiency Ratio

Efficiency ratio assess the internal use of a company's assets and liabilities. The efficiency rate can be calculated as sales revenue, settlement of liabilities, total and capital consumption as well as inventories and general machine use. This relationship is also monitors and evaluates the performance of commercial and investment banks.

The efficiency ratio measures a company's ability to use its assets to generate income. The efficiency rate generally takes into account different aspects of the business, e.g. For example, the time it takes to collect money from customers or the time it takes to convert inventory to cash. This makes efficiency measures important, as improvements usually lead to better profitability.

The efficiency ratio also applies to banks. For example, a bank's efficiency rate measures the bank's total spending as a percentage of the number of transactions. As with previous efficiency measures, analysts can use it to assess the performance of commercial and investment banks. For the bank, the efficiency rate is the easiest way to measure the ability to turn assets into income.

Accounts Receivable Turnover Ratio

Net Credit Sales/ Av. Account Receivables

For the year 2019	For the year 2018	For the year 2017	For the year 2016	For the year 2015
250,897	270,689	219,853	33,188	43,235
135000	151000	293000	487000	106,200
1.858496296	1.792642384	0.750351536	0.068147844	0.407109228

Revenue receivable refers to the frequency that the company produces returns on average each year. This indicator assess the company's ability to borrow and finance customer indicators on time. Along with high-quality clients, high turnover is a combination of a traditional credit policy and an aggressive purchasing agency. The low fluctuation rate allows you to collect very old debts that would unnecessarily block working capital. Flexible or non-existent credit policy, insufficient purchasing function and/or a high proportion of clients in financial difficulties can result in lower credit fluctuation rates. Low sales mean higher error rates. Tracking credit sales along the trend line can help determine if sales are slowing down. In this case, the collection team must consider at least the reasons for raising funds or reducing sales.

Potential issues for British Petroleum plc

There are sure external and inner surroundings of BP, which can create troubles for the future; external surroundings include social and cultural, technical, economic, political, legal and government elements. These factors offer opportunities and threats to the enterprise. Internal surroundings consist of structures, assets, values, capabilities, way of life and systems of a business enterprise (Wicaksono et al., 2019). This facilitates to become aware of BP strengths and weaknesses in relation to the marketplace. A number of the capability issues are as underneath. The oil spill in the Gulf of Mexico has broken BP's recognition, which in flip has made a lengthy-term impact on its ability to get admission to new opportunities, each around the world and in us. This created public, political, and enterprise sentiment closer to BP in oil and gasoline drilling activities; it is able to damage or impair the employer's present industrial relationships with companions, and host governments. It has also created a big burden of cash on it while it changed into making sure to bring the entire back to every day and this could in destiny as well create a lot of burden on coins for BP (Yemen, 2019), this could lead to its ability to spend money on new opportunities and deliver long-time period growth.

Comparison to major competitor(s) and/or sector average

BP is an oil and gas company involved in the development, manufacturing and transportation of petroleum and vegetable fuels in oil and gas exploration. BP is responsible for the refining, marketing, transportation and sale of gasoline, diesel, flight gas and various petroleum products. Petrochemical production, advertising and marketing. Because the global oil and energy sector is so aggressive, it shows that the company is strong in growth and the realisation of its capabilities and can be competitive or try to imitate information problems. Therefore, the development of new skills is essential to increase competitiveness. Aggressive profit is made when there are no simple, neutral or complex skills other than internal guidance and control. Skills development through participation is essential to performance, and BP and several similar organisations must develop these skills. The resource-based vision necessarily suggests that strong and sustainable profitability should help develop current and new assets and skills in response to changing market conditions. Administrative efficiency and awareness are linked to real estate growth and contribute to the competitive advantage.

Because aggressive weather is an issue, there can be long-term resistance in the primary markets of BP, even if the international energy markets are not affected by government regulations and changes. The global economy and globalisation are

many factors that have accelerated competition in the world market, especially for the oil and petroleum industry (Wadhwa, 2019). The petroleum industry is managed by several large international petroleum agencies, including BP, Shell, Exxon Mobil and Chevron, in collaboration with groups from the Gulf States. Seven major oil companies have produced, transported, trained and promoted a third of the local oil supply for many years. State oil companies such as Saudi Arabia, the Gulf States and the OPDC are the largest suppliers of crude oil (Wadhwa, 2019). Aramco produces four times more oil than Exxon Mobil, the largest private oil company, and Exxon Mobil produces twice as much oil and gasoline.

Gazprom is one such agency, mainly managed by the Russian government, but privatised and responsible for more than 20% of the production and export of natural gas in the world. Representatives of the oil industry and OPEC are active in the refining, advertising and petrochemical industries, but they are of global importance and, although they are present worldwide, the cooperation of these companies in neighbouring markets is crucial (Eriki et al., 2017). There are also issues of environmental awareness and corporate responsibility, and BP technologies have been developed from these questions. The authors discuss developing countries and groups involved in reducing options to reduce greenhouse gases and emissions. Funding the system can help reduce emissions and increase revenue. However, prices can go up quickly, and projects may not be economical, which requires stricter guidelines. Assessing real options appears to be a necessary tool for the energy company, and the energy sector is entirely fueled by greenhouse gas activity interested in emissions and the role of control in greenhouse gas emissions.

Competitor Analysis of Financial Ratios: Exxon

Net profit margin

For the year 2019
14300
255,583
0.055950513

The net profit margin for British Petroleum BP plc is 0.01604244, and for Exxon, it is 0.05, it is seen that in the year 2019 both are in close proximity. Exxon has a higher net profit margin than BP implying a better cost management for her.

Current Ratio

For the year 2019
50,052
20,578
2.432306347

The current ratio of Exxon is very high; it is a good indicator Exxon is more capable of paying its obligations, debts or other short term liabilities, whereas the current ratio of BP for the year 2019 is low at 0.007497084 indicating that BP has recently be facing difficulties in meeting up with its obligations.

Debt to Capital Ratio

For the year 2019
20,578
198,938
0.103439262

Exxon has a lower debt to capital ratio thus having more flexibility is raising capital through debt as compared to BP with a relatively higher debt to capital ratio less capital from equity and more capital from debt.

Accounts Receivable Turnover Ratio

Net Credit Sales/ Av. Account Receivables

For the year 2019
255,583
26966
9.477972261

Revenue receivable refers to the frequency that the company produces returns on average each year. This indicator assess the company's ability to borrow and finance customer indicators on time. The indicators with Exxon are very high as compared to BP thus implying that Exxon has high quality customers that pay their debt and might also be very cautious in dealing with extending customer credits. BP on the other has bad credit policies and its customers are less creditworthy and hence would want to evaluate is credit policies.

Key business strategies of BP over the past five years

One of the main guidelines for in-route components was total energy efficiency in BP's operations, which was to think about the carbon load when making investment decisions and selling energy routes. Low charge on gasoline or the energy age. In addition, the company plans to continue investing in electricity opportunities for biofuels, wind and solar or carbon sequestration and in research and technology (ADILOĞLU et al., 2017). Companies are concerned with practical and reliable operations, with ongoing adventures in non-public security and implement the operations control system in accordance with regulations. People's efforts are directed at developing skills and leadership, and achievements help restore sales or reduce complexity and costs. In addition to the management and restructuring lifestyle, the development of talents and skills, as well as diversity or the reward for overall performance, are essential factors in the organisational model (Chateau, 2017). BP has already recognised new areas for the right of access to its operations, including Iraq, Indonesia, Jordan and new areas in the Gulf of Mexico and Egypt.

Reserves and the alternative to useful resources vary from 12% to 250%, and the increase in production is 4%. The organisation's success was designed as governance and guidance for shareholders, more comfortable processes and additional growth that corresponded to normal monetary performance (Crosby et al., 2018). For 2010, a total return of US \$ 4 billion was forecast, production growth of 1 to 2%, focus on cost performance and task improvement, with an average volume growth of 1 to 2% d " until 2015, with better skills and sustainable growth until 2020. Beneficial Last year's aid bases and growth resources were characterised by the expansion of deep waters, the use of fuel statistics and the management of large oil fields in the region, as well as the possibility of use technology (Mohagheghi et al., 2017). The company focused on increasing overall performance and commission and capital revenues and diversifying the portfolio with an evolving resource base. For 2015, a dynamic of costs, techniques and operations was expected, in addition to an average increase in volume of 1 to 2%.

The percentage of BP has also been shown to have a greater capacity to sustain the boom through 2020 and to change the way that pressure is put on capital and interest rates. Gasoline price chains through integration and first-class must mean markets and locations that are suitable for logistics and refineries, as well as extremely good goods and types through advertising and product management (Elsayed, 2019) distribution channels. BP% also focused on optimising delivery,

purchasing and promoting common methods at the returned work place. Under the infrastructure adjustments, the prevailing reconstruction of the CDU for the heavy oil method and for the extraction of crude oil as well as new global devices for the removal of sulfur and for the processing of hydrocarbons on a global level were overcome. The refinery infrastructure improves the region's profit (Lahiri, 2016). The above market share opportunities show that 40% of capital in growing markets with a fundamental generation and solid customer relationships, manufacturers with a growth margin and high prices shrank. In addition, the organisation attaches importance to security and performance, to the successful integration and vigilance of resources and technology, with a focus on relaxed and reliable operation. Over the next two to three years, more than \$ 2 billion in potential pre-tax benefit may be generated. The cost peaked in 2004, with changes in refineries in 2012. In addition to the overall rate and return on investment, the organisation's focus has become manufacturing strategies and a focus for sales growth in production with higher performance and rate efficiency. The energy of the possible becomes visible as concentrated and disciplined with better business efficiency and strategic growth.

The main focus of the strategy is on increasing revenue and using opportunity energy. It is also a focus on the general performance of the company and in the overall performance and overall performance of the award and capital. BP is one of the first multinationals to join the emerging consensus on climate change. BP has focused on a technology to reduce greenhouse gas emissions. With solar energy, BP's specific industries are considered to be the exploration, petroleum and chemical industries (Crosby et al., 2017). But as BP's position approaches the climate alternative, analysts are trying to find out that "BP is responding to inevitable environmental pollution, but the agency is adopting the standard or BP is using the moment, opportunity and benefits (Lahiri, 2016). International climate change is a gateway to a modern economic model of the 21st century? "This seems to be a crucial assessment, as it indicates whether BP is designing a new organisational model through alternative climate detection or whether it is responding virtually to global environmental pollution and irritating situations and whether the detection of the business climate within your method for the Percentage of BP can be high quality or terrible.

Undoubtedly, BP occupied its IT support through redistributing and redistributing helped in the reshaping of the IT division (Zativita, 2019). At BP data innovation was utilised as a utility for tasks to create application and flexibly handling power

as additionally to give innovation support. This is currently given to redistributing suppliers, and the organisation purchases nonexclusive applications or agreements the work. The IT division is required to improve the business as opposed to be an interior gathering that just meets gracefully of the organisation.

The organisation anyway has an alternate IT methodology and doesn't depend on a solitary provider for all IT needs despite the fact that this could make BP to heighten its charges and become progressively inflexible in its administrations. Simultaneously specific re-appropriating and division of IT activities prompted strain on the board assets. BP's IT procedure centred around getting IT administrations from numerous providers in spite of the fact that these could be conveyed in a manner as though by a single provider (Crosby et al., 2017). Contractual workers conveyed administrations to 42 BP organisations around the world.

The subcontracts were likewise performed viably, and the foundation of the BP re-appropriating technique was to utilise administrations from different providers but then venture them as one. The IT division is kept separate from Operations with the goal that the IT directors could freely chip away at the business as opposed to engage in detail (Borozan et al., 2020). A few IT administrations including huge and little suppliers were utilised for re-appropriating, which was anyway a troublesome undertaking yet had the advantages of diminished fixed costs, improved help, and access to new thoughts and advancements. Anyway, the drawbacks were the specialised issues and the threat of activities and the executives getting stacked with IT issues.

Analysis of two Projects

Year	A	B
0	-85	-90
1	10	40
2	20	35
3	25	7
4	65	40

Project A

Present Value of future cash flows

Project A

Year	Amount	Interest		Present Value
1	10	1.1025^1	1.1025	9.070294785
2	20	1.1025^2	1.2155	16.4541341
3	25	1.1025^3	1.34009	18.65546344
4	65	1.1025^4	1.47745	43.99472063
			Present Value	88.17461296

Project B

Present Value of future cash flows

Project B				
Year	Amount	Interest		Present Value
1	40	1.1025^1	1.1025	36.28117914
2	35	1.1025^2	1.2155	28.79473468
3	7	1.1025^3	1.34009	5.223529763
4	40	1.1025^4	1.47745	27.07367424
				97.37311781

Payback Period

Project A

$$(85 - 88.1746) = 3.1746$$

Project B

$$(90 - 97.37311) = 7.37311$$

The repayment period means the investment cost divided by the annual cash flow. The lower the repayment, the more desirable the investment will be. The repayment period does not take into account the time value of the money. This is determined by calculating how many years it will take to recover the funds invested. For example, if the investment costs are covered for five years, the repayment period will be five years. Some analysts prefer recovery because of its simplicity. Others prefer to use it as an additional reference when making an investment budget decision.

The refund period does not take into account what happens after the return and ignores the total return (Arjunan, 2016).. NPV is preferred by many managers and

investors as an instrument for making investment decisions. Capital value is the difference between the present value of the money received and the present value of the money sent over a given period.

IRR for both Projects

$$=NPV=t=1\sum T(1+IRR) tCt-C0$$

where:

- ✓ C_t =Net cash inflow during the period t C_0 =Total initial investment costs
- ✓ IRR =The internal rate of return
- ✓ T =The number of time periods

Project A is 11.562% Internal Rate of Return

Project B is 14.247% Internal Rate of Return

The internal rate (IRR) is the measure used in the investment budget to assess the potential profitability of an investment. The internal rate of return is the discount rate, where the present value of all cash flows for a specific project is zero.

Critically discuss the advantages and shortcomings of the PBP, IRR and NPV techniques

These two criteria measure the expected performance of an investment project, each with a slightly different objective.

NPV: the monetary value of your investment

Given the company that needs investment (I) and has had the most positive cash flows (C) for several years (N), we initially recover the amount invested. Capital (i) returns to the project simultaneously with non-investment in the project. Therefore, cash flows must be discounted to the present value using the discount rate (r), which represents the cost of capital and the risks required for the project. By subtracting this value from the initial investment (I) we obtain the capital value of the project (Damodaran, 2016). If the principal exceeds zero, the profitable investment loan is deferred after the period it is used in the account.

IRR: return on invested capital, in percentage

When we consider a company that needs investments (I), we want to know the return on investment before deciding to operate it. To do this, create the above equation with the zero capital value and solve it using the discount rate (Y). Solving this equation provides the IRR. If the IRR is high, the project in question seems very profitable and can be compared to investments at high-interest rates

which are unlikely to remain on the market. On the other hand, a lower internal return shows that it is better to invest in another project. Whatever the outcome, you should not make a quick decision and take into account all the factors associated with the project in question (risks, schedule, size, etc.)

Two different criteria for different objectives

Based on, as mentioned before, NPV and IRR are the two criteria to determine if the project should continue. The value of capital depends on the trust of investors or the public. Capital valuation or budgeting is particularly useful for evaluating long-term projects. However, internal performance is more precise when evaluating short-term projects with or without cash flow. IRR is, above all, a relationship that makes it easier to compare different projects when making strategic decisions (Borozan et al., 2020). There are several factors to consider before deciding to invest in a large commercial or real estate project. However, the NPV and IRR standards are a good place to start.

Calculation of the Payback Period

Example 1: A dairy farmer is looking for a new source of income and plans to install an anaerobic digester to transform manure and organic waste into natural gas. This gas could be used as an energy source for exploitation, in addition to creating additional revenue from sales of excess natural gas to the grid (Sayari, 2017)..

Suppose that:

- ✓ the cost of the anaerobic digester is \$ 500,000;
- ✓ annual energy costs decrease by \$ 20,000;
- ✓ annual natural gas sales are \$ 60,000.

Benefits

The recovery time is easy to calculate and explain. For an unacceptable recovery phase, you may need to rethink the project (Wicaksono et al., 2019). Therefore, this method is an important tool for companies with liquidity problems, as it gives the impression of projects that offer a faster payback period.

The case

The redemption period does not take into account the current market value of the funds. As the saying goes, today's money is worth more than (Abdullahi et al., 2017). In terms of payment terms, it makes sense to consider future cash flows based on the project risk and the effects of inflation over time.

Another option: the updated recovery time

Example 2: Situation similar to the previous example, except that, the future cash flows are discounted at a rate of 5% per year. In addition to reflecting the cost of capital for the business (whether the money comes from a loan or the company's internal funds) (Ardalan, 2017), this method should also take into account the risks associated with the investment.

0	-500 000	-500 000	-500 000
1	80 000	$80\,000/(1,05) = 76\,190$	-423 810
2	80 000	$80\,000/(1,05)^2 = 72\,562$	-351 247
3	80 000	$80\,000/(1,05)^3 = 69\,107$	-282 140
4	80 000	$80\,000/(1,05)^4 = 65\,816$	-216 324
5	80 000	$80\,000/(1,05)^5 = 62\,682$	-153 642
6	80 000	$80\,000/(1,05)^6 = 59\,697$	-93 945
7	80 000	$80\,000/(1,05)^7 = 56\,855$	-37 090
8	80 000	$80\,000/(1,05)^8 = 54\,147$	17 057

The present value of cash flows is \$ 76,190 in the first year, \$ 72,562 in the second year, and so on. Thus, after receipt of the eighth payment, the project will show a positive balance. Therefore, the updated payback period extends over a period of eight years (Myšková, 2017). These methods do not take into account cash flows after the (updated) payback period. However, they are a starting point for determining the viability of an investment before further research and planning.

References

- Abdullahi, A., Abubakar, M. and Ahmad, S.S.A., 2017. International Financial Reporting Standards (IFRS) adoption and oil & gas companies performance in Nigeria. *International Journal of Accounting and Economics Studies*, 5(2), pp.146-149.
- Abubakar, M.Y., Ahmad, S.S.A., Kaoje, N.A. and Abdulazeez, M., 2016. Performance Measurement And Management in the Upstream Oil And Gas Sector. *IOSR Journal of Business and Management*, 18(08), pp.26-33.
- ADILOĞLU, B. and YÜCEL, G., 2017. DÜNYA'NIN EN BÜYÜK KARŞILIKLARI: BP PLC ve VW AG. *Mali Cozum Dergisi/Financial Analysis*, (141).

- Ardalan, K., 2017. Advancing the Interpretation of the Du Pont Equation. *Journal of Modern Accounting and Auditing*, 13(7), pp.294-298.
- Arjunan, K., 2017. A New Method to Estimate NPV and IRR from the Capital Amortization Schedule and an Insight into Why NPV Is Not the Appropriate Criterion for Capital Investment Decision. *Available at SSRN 2899648*.
- Arkan, T., 2016. The importance of financial ratios in predicting stock price trends: A case study in emerging markets. *Finanse, Rynki Finansowe, Ubezpieczenia*, 79(1), pp.13-26.
- Bansal, R., Kar, S.K. and Mishra, S., 2016. Oil, Gas & Energy Law Intelligence.
- Bawa, J.K., Goyal, V., Mitra, S.K. and Basu, S., 2019. An analysis of NPAs of Indian banks: Using a comprehensive framework of 31 financial ratios. *IIMB Management Review*, 31(1), pp.51-62.
- Borožan, D., Starčević, D.P. and Funarić, M.R., 2020. Toward a European Energy Union: Financial Ratio Analysis of the EU Energy Sector. In *Eurasian Economic Perspectives* (pp. 193-207). Springer, Cham.
- Bretherick, L., 2016. *Bretherick's handbook of reactive chemical hazards*. Elsevier.
- British Petroleum, P.L.C., 2017. BP Sustainability Report 2014.
- Byers, R., 2017. Implications of Transitioning to IFRS on Key Financial Indicators in The Oil and Gas Production Industry. *Journal of Accounting and Finance*, 17(1).
- Chandra, P., 2017. *Investment analysis and portfolio management*. McGraw-hill education.
- Chateau, J.P., 2017. Fundamental analysis: stock valuation.
- Crosby, N., Devaney, S. and Wyatt, P., 2018. The implied internal rate of return in conventional residual valuations of development sites. *Journal of Property Research*, 35(3), pp.234-251.
- Damodaran, A., 2016. *Damodaran on valuation: security analysis for investment and corporate finance* (Vol. 324). John Wiley & Sons.
- Danko, T.P., Grishina, O.A., Kitova, O.V., Ivolgina, N.V., Solovyova, M.G., Seifullaeva, M.E. and Sekerin, V.D., 2018. Management of Intangible Assets' Potential at Oil Companies: Market Positioning, Place and Role of

- Business Reputation--Goodwill of Companies. *Journal of Applied Economic Sciences*, 13(1).
- Easton, M. and Sommers, Z., 2018. *Financial Statement Analysis & Valuation*, 5e.
- Elsayed, N. and Ammar, S., 2019. Sustainability governance and legitimisation processes: Gulf of Mexico oil spill. *Sustainability Accounting, Management and Policy Journal*.
- Eriki, E., Modebe, N.J., Okoye, L.U. and ERIN, O., 2017. International financial reporting standards (IFRS) adoption and the performance of key financial ratios: Evidence from quoted deposit money banks in Nigeria. *Journal of Policy and Development Studies*, 11(3), pp.40-47.
- Forbes, R. and Gupta, G., 2019. New Accounting Standards for Leases and Their Possible Impacts on Financial Analyses and Valuation. *Journal of Forensic and Investigative Accounting*, 11(3).
- Gambelli, D., Alberti, F., Solfanelli, F., Vairo, D. and Zanolli, R., 2017. Third generation algae biofuels in Italy by 2030: A scenario analysis using Bayesian networks. *Energy Policy*, 103, pp.165-178.
- Gibson, A.M., 2016. Reading and Interpreting A Financial Statement.
- Gorshkov, A.S., Vatin, N.I., Rymkevich, P.P. and Kydrevich, O.O., 2018. Payback period of investments in energy saving. *Magazine of Civil Engineering*, (2).
- Graybeal, P., Franklin, M. and Cooper, D., 2018. Compare and Contrast Non-Time Value-Based Methods and Time Value-Based Methods in Capital Investment Decisions. *Principles of Accounting, Volume 2: Managerial Accounting*.
- Jiang, L., 2016, August. Application Analysis on Internal Rate of Return Rule for Investment Decision. In *2016 International Conference on Humanity, Education and Social Science*. Atlantis Press.
- Jiang, L., 2016, August. Application Analysis on Internal Rate of Return Rule for Investment Decision. In *2016 International Conference on Humanity, Education and Social Science*. Atlantis Press.
- Kahn, M.J. and Baum, N., 2020. Basic Accounting and Interpretation of Financial Statements. In *The Business Basics of Building and Managing a Healthcare Practice* (pp. 13-18). Springer, Cham.

- Kalugin, V.A., Lomazov, V.A., Zimakova, L.A., Nikitin, V.M. and Lavrinenko, E.A., 2016. Multi-Method Approach to Making Investment Decisions. *International Business Management*, (10), pp.6004-6008.
- Kamaluddin, A., Ishak, N. and Mohammed, N.F., 2019. Financial distress prediction through cash flow ratios analysis. *International Journal of Financial Research*, 10(3), pp.63-76.
- Kumar, B.R., 2019. British Petroleum Merger with Amoco. In *Wealth Creation in the World's Largest Mergers and Acquisitions* (pp. 217-222). Springer, Cham.
- Lahiri, K., 2016. Business and Economic Forecasting: Analyzing and Interpreting Econometric Results. *International Econometric Review*, 8(1), pp.1-3.
- Meriç, E., Kamlı, M. and Temizel, F., 2017. Interactions among Stock Price and Financial Ratios: The Case of Turkish Banking Sector. *Applied Economics and Finance*, 4(6), pp.107-115.
- Mohagheghi, V., Mousavi, S.M., Vahdani, B. and Shahriari, M.R., 2017. R&D project evaluation and project portfolio selection by a new interval type-2 fuzzy optimisation approach. *Neural Computing and Applications*, 28(12), pp.3869-3888.
- Myšková, R. and Hájek, P., 2017. Comprehensive assessment of firm financial performance using financial ratios and linguistic analysis of annual reports. *Journal of International Studies*, volume 10, issue: 4.
- Santos, M.R. and Richman, V., 2016. FINANCIAL RATIO AND VALUATION ANALYSES OF CONSTELLATION BRANDS INC.: A CASE STUDY. *Strategic Winery Tourism and Management: Building Competitive Winery Tourism and Winery Management Strategy*, p.247.
- Sayari, N. and Mugan, C.S., 2017. Industry specific financial distress modeling. *BRQ Business Research Quarterly*, 20(1), pp.45-62.
- Wadhwa, B., 2019. Financial ratios: The precarious core of fundamental analysis. *Frontiers Journal of Accounting and Business Research*, 1(1), pp.33-35.
- Wen, H. and Zhu, T., 2019. Interpretation of Financial Statements.

- Wicaksono, A.B., Hermasnyah, H., Wijanarko, A. and Sahlan, M., 2019, September. Scale-up simulation and economic evaluation of encapsulated eugenol with casein micelle using spray drying method. In *Journal of Physics: Conference Series* (Vol. 1295, No. 1, p. 012072). IOP Publishing.
- Yemen, G., Lenox, M. and Harris, J.D., 2017. BP: Beyond Petroleum. *Darden Business Publishing Cases*.
- Zativita, F.I. and Chumaidiyah, E., 2019, May. Feasibility analysis of Rumah Tempe Zanada establishment in Bandung using net present value, internal rate of return, and payback period. In *IOP Conference Series: Materials Science and Engineering* (Vol. 505, No. 1, p. 012007). IOP Publishing.