The Project Report of Traineeship Program 2023

Financial Data Analysis using Ratios

Basavaraj

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Abstract

A company can perform ratio analysis over time to get a better understanding of the trajectory of its company. Instead of being focused on where it is today, the company is more interested doing this type of analysis is more interested in how the company has performed over time, what changes have worked, and what risks still exist looking to the future. Performing ratio analysis is a central part in forming long-term decisions and strategic planning.

Ratios are numerical expressions that compare two or more quantities. They are widely used in various fields of study, such as mathematics, statistics, economics, finance, accounting etc. In finance and accounting, ratios are especially useful for analysing and evaluating the financial performance and position of a company or an industry. Ratios can help investors and analysts make informed decisions about investing in or lending to a company.

Ratio analysis compares line-item data from a company's financial statements to reveal insights regarding profitability, liquidity, operational efficiency, and solvency. Ratio analysis can mark how a company is performing over time, while comparing a company to another within the same industry or sector.

There are different types of ratios for analysis that can help measure various aspects of a company’s performance, risk, efficiency, growth, and valuation. Some of the most commonly used ratio are Liquidity ratios, Solvency ratios, Profitability ratios and Activity ratios.

Part I
Concepts of Financial Ratio Analysis

Introduction to Financial Ratio Analysis

Financial ratio analysis is a powerful tool used to evaluate the financial performance of a business. By analysing various financial ratios, such as liquidity ratios, profitability ratios and solvency ratios, analysts can gain insight into the financial health and operational efficiency of a company. Ratio analysis can help businesses make informed decisions about their operations and investments. It can also be used to compare the performance of different companies within the same industry.

Ratio Analysis and Types of Ratios

Ratio analysis is a quantitative method of gaining insight into a company's liquidity, operational efficiency, and profitability by studying its financial statements such as the balance sheet and income statement. Ratio analysis is a cornerstone of fundamental equity analysis.

Types of Ratio Analysis

The various kinds of financial ratios available may be broadly grouped into the following six silos, based on the sets of data they provide:

i. Liquidity Ratio
ii. Solvency Ratio
iii. Efficiency Ratio
iv. Probability Ratio

I. Liquidity ratio:

Liquidity ratios measure a company's ability to pay off its short-term debts as they become due, using the company's current or quick assets. Liquidity ratios include the current ratio, quick ratio, and working capital ratio.

Liquidity or short term solvency means ability of the business to pay its short term liabilities. Inability to pay off short term liabilities affects its credibility as well as its credit rating. Continuous default on the part of the business leads to its sickness and dissolution. Short term lenders and creditors of a business are very much interested to know its state of liquidity because of their financial stake. Both lack of sufficient liquidity and excess liquidity is bad for organization.

Various liquidity ratios:-

- Current Ratio
- Quick Ratio or Acid test Ratio
- Cash Ratio or Absolute Liquidity Ratio
- Net Working Capital Ratio

i. Current Ratio:

The current ratio formula is classified as a liquidity ratio that indicates a company's ability to pay off its current liabilities, mainly due within one year.

The Current Ratio formula is

Current Ratio = Current Assets / Current Liabilities

- Current assets are short-term holdings that can be liquidated within a calendar year or through an accounting period, such as cash and cash equivalents, short-term investments, etc.
- Current liabilities are short-term obligations intended to be paid off within a year or an accounting period.

ii. Quick Ratio:

The Quick Ratio, also known as the Acid-test or Liquidity ratio, measures the ability of a business to pay its short-term liabilities by having assets that are readily convertible into cash.

Quick Ratio = Quick Assets/ Current Liabilities

Where,

Quick Assets= Currents Assets-Inventories-Prepaid Expenses

iii. Cash Ratio:

The Cash Ratio measures the absolute liquidity of business. This ratio considers only the absolute liquidity available with the firm.

Cash ratio = Cash and Bank balances + marketable securities / current liabilities

iv. Net Working Capital:

It is more of a measure of cash flow than ratio. The result of this calculation must be positive number. However, in certain business models it may be negative.

It can be calculated as follows:

Net Working Capital = Current Assets-Current Liabilities

II. Solvency Ratios

Solvency ratio is a key metric used to measure an enterprise's ability to meet its long-term debt obligations and is used often by prospective business lenders. A solvency ratio indicates whether a company's cash flow is sufficient to meet its long-term liabilities and thus is a measure of its financial health. An unfavourable ratio can indicate some likelihood that a company will default on its debt obligations.

Types of Solvency Ratios

- Interest Coverage Ratio
- Debt to Asset Ratio
- Equity Ratio
- Debt to Equity Ratio

i. Interest Coverage Ratio:

The interest coverage ratio measures how many times a company can cover its current interest payments with its available earnings. In other words, it measures the margin of safety a company has for paying interest on its debt during a given period.

Interest Coverage Ratio = Earnings before Interest and Taxes / Interest Expenses

ii. Debt to Asset Ratio:

The debt-to-assets ratio measures a company's total debt to its total assets. It measures a company's leverage and indicates how much of the company is funded by debt versus assets, and therefore, its ability to pay off its debt with its available assets. A higher ratio, especially above 1.0, indicates that a company is significantly funded by debt and may have difficulty meetings its obligations.

Debt to Asset Ratio = Debt / Assets

iii. Equity Ratio:

The equity ratio, or equity-to-assets, shows how much of a company is funded by equity as opposed to debt. The higher the number, the healthier a company is. The lower the number, the more debt a company has on its books relative to equity.

Equity Ratio = Total Shareholder Ratio/ Total Assets

iv. Debt to Equity Ratio:

The D/E ratio is similar to the debt-to-assets ratio, in that it indicates how a company is funded, in this case, by debt. The higher the ratio, the more debt a company has on its books, meaning the likelihood of default is higher. The ratio looks at how much of the debt can be covered by equity if the company needed to liquidate.

Debt to Equity Ratio = Debt Outstanding / Equity

III. Efficiency Ratio

Efficiency ratios are metrics that are used in analysing a company's ability to effectively employ its resources, such as capital and assets, to produce income. The ratios serve as a comparison of expenses made to revenues generated, essentially reflecting what kind of return in revenue or profit a company can make from the amount it spends to operate its business.

Types of Efficiency Ratios are as following:

- Inventory Turnover Ratio
- Accounts Receivable Turnover Ratio
- Accounts Payable Turnover Ratio
- Assets Turnover Ratio

i. Inventory Turnover Ratio:

The inventory turnover ratio is expressed as the number of times an enterprise sells out of its stock of goods within a given period of time. The ratio is calculated by taking the cost of goods sold over the average inventory for a particular time period (e.g., 1 year).

Inventory Turnover Ratio= Cost of Goods Sold / Average Inventory

ii. Accounts Receivable Turnover Ratio:

The accounts receivable ratio evaluates the efficiency of revenue collection. It measures the number of times a company collects its average accounts receivable over a given period.

Accounts Receivable Turnover Ratio=

Net Credit Sales / Average Accounts Receivable

Where:

- Net Credit Sales are sales where the proceeds are collected at a later point in time. Net credit sales = Sales on credit – Sales returns – Sales allowances.
- Average Accounts Receivable is the sum of starting and ending accounts receivable balances over the time period (e.g., monthly or quarterly), divided by 2.

iii. Accounts Payable Turnover Ratio:

The accounts payable turnover ratio represents the average number of times a company pays off its creditors during an accounting period. The ratio also serves as a measurement of short-term liquidity. A higher payable turnover ratio is favourable, as it enables the company to hold cash for a longer time. This, in turn, shrinks the working capital funding gap or working capital cycle.

Accounts Payable Turnover Ratio can be calculated as follows:

Net Credit Purchases / Average Accounts Payable

Where:

- Net Credit Purchases = Cost of Goods Sold (COGS) + Ending Inventory balance – Starting Inventory balance for a specified period. However, this is the formula for purchases in general. Net credit purchases are only the purchases made on credit. Alternatively, since the number for net credit purchases is difficult to find, analysts often substitute COGS as the numerator instead.
- Average Accounts Payable is the sum of starting and ending accounts payable balances over a time period (e.g., monthly or quarterly), divided by 2. Both balances can be found on the company's balance sheet.

iv. Asset Turnover Ratio:

The asset turnover ratio is the ratio of total sales or revenue to average assets. It measures the efficiency of a company's assets in generating revenue or sales. The ratio can be used as an indicator of the efficiency with which a company is using its assets to generate revenue. A higher ratio is generally favourable, as it indicates an efficient use of assets.

Asset Turnover Ratio = Net Sales / Average Total Assets

Where:

- Net Sales = Sales minus Sales returns, Sales discounts, and Sales allowances
- Average Total Assets = (Total assets at the end of the period + Total assets at the beginning of the period) / 2.

IV. Probability Ratio:

Profitability ratios are financial metrics used by analysts and investors to measure and evaluate the ability of a company to generate income (profit) relative to revenue, balance sheet assets, operating costs, and shareholders' equity during a specific period of time. They show how well a company utilizes its assets to produce profit and value to shareholders.

A higher ratio or value is commonly sought-after by most companies, as this usually means the business is performing well by generating revenues, profits, and cash flow. The ratios are most useful when they are analysed in comparison to similar companies or compared to previous periods.

The most commonly used Probability Ratios are as follows:-

- Gross Profit Margin
- EBITDA Margin
- Operating Profit Margin

- Net Profit Margin
- Return on Assets
- Return on Equity
- Return on Invested Capital

i. Gross Profit Margin:

Gross profit margin – compares gross profit to sales revenue. This shows how much a business is earning, taking into account the needed costs to produce its goods and services. A high gross profit margin ratio reflects a higher efficiency of core operations, meaning it can still cover operating expenses, fixed costs, dividends, and depreciation, while also providing net earnings to the business. On the other hand, a low profit margin indicates a high cost of goods sold, which can be attributed to adverse purchasing policies, low selling prices, low sales, stiff market competition, or wrong sales promotion policies.

Gross Profit Margin = Gross Profit / Sales * 100

ii. EBITDA Margin:

EBITDA stands for Earnings Before Interest, Taxes, Depreciation, and Amortization. It represents the profitability of a company before taking into account non-operating items like interest and taxes, as well as non-cash items like depreciation and amortization. The benefit of analysing a company's EBITDA margin is that it is easy to compare it to other companies since it excludes expenses that may be volatile or somewhat discretionary. The downside of EBTIDA margin is that it can be very different from net profit and actual cash flow generation, which are better indicators of company performance. EBITDA is widely used in many valuation methods.

EBITDA Margin = EBITDA / Sales * 100

iii. Operating Profit Margin:

Operating profit margin – looks at earnings as a percentage of sales before interest expense and income taxes are deduced. Companies with high operating profit margins are generally more well-equipped to pay for fixed costs and interest on obligations, have better chances to survive an economic slowdown, and are more capable of offering lower prices than their competitors that have a lower profit margin. Operating profit margin is frequently used to assess the strength of a company's management since good management can substantially improve the profitability of a company by managing its operating costs.

Operating Profit Ratio = Operating Profit / Sales * 100

iv. Net Profit Margin:

Net profit margin is the bottom line. It looks at a company's net income and divides it into total revenue. It provides the final picture of how profitable a company is after all expenses, including interest and taxes, have been taken into account. A reason to use the net profit margin as a measure of profitability is that it takes everything into account. A drawback of this metric is that it includes a lot of "noise" such as one-time expenses and gains, which makes it harder to compare a company's performance with its competitors.

Net Profit Margin = Net Profit / Sales * 100

v. Return on Assets:

Return on assets (ROA), as the name suggests, shows the percentage of net earnings relative to the company's total assets. The ROA ratio specifically reveals how much after-tax profit a company generates for every one dollar of assets it holds. It also measures the asset intensity of a business. The lower the profit per dollar of assets, the more asset-intensive a company is considered to be. Highly asset-

intensive companies require big investments to purchase machinery and equipment in order to generate income.

Return on Assets = Net Profit after taxes / Average Total Assets

vi. Return on Equity:

Return on equity (ROE) – expresses the percentage of net income relative to stockholders' equity, or the rate of return on the money that equity investors have put into the business. The ROE ratio is one that is particularly watched by stock analysts and investors. A favourably high ROE ratio is often cited as a reason to purchase a company's stock. Companies with a high return on equity are usually more capable of generating cash internally, and therefore less dependent on debt financing.

ROE = (Net Profit After Taxes-Preference Dividend (if any) * 100/ Net worth) / Equity Shareholders Fund

vii. Return on Capital Employed:

ROCE is a measure of return generated by all providers of capital, including both bondholders and shareholders. It is similar to the ROE ratio, but more all-encompassing in its scope since it includes returns generated from capital supplied by bondholders.

ROCE = EBIT(1-t)/ Capital Employed * 100

where,

Capital Employed = Total Assets – Current Liabilities

Or

= Fixed Assets + Working Capital

Sources of Financial Data for Ratio Analysis

The sources of information for Ratio Analysis are as follows:-

1. Annual Reports.
2. Interim Financial Statements.
3. Notes to Accounts.
4. Statement of Cash Flows.
5. Business Periodicals.
6. Credit and Investment advisory services.

Users and Objectives of Ratio Analysis

Sr No	Users	Objectives	Ratios used in general
1.	Shareholders	Being owners of the organisation they are the interested to know about profitability and growth of the organisation.	Profitability Ratios [EPS, DPS, Price earnings(P/E), Dividend Pay out Ratio (DP)]
2.	Investors	They are interested to know the overall financial health of the organisation particularly future perspective of the organisations.	• Profitability Ratios • Capital Structure Ratios • Solvency Ratios • Turnover Ratios
3.	Lenders	They will keep an eye on the safety perspective of their money lent to the organisation.	• Solvency Ratios • Turnover Ratios • Profitability Ratios
4.	Creditors	They are interested to know liability position of the organisation particularly in short term. Creditors would like to know whether the organisation will be able to	• Solvency Ratios

		pay the amount on due date.	
5.	Employees	They will be interested to know the financial wealth of the organisation and compare it with competitor company.	• Solvency Ratios • Profitability Ratios • Return on Investment
6.	Regulator /Government	They will analyse the financial statements to determine taxations and other payable to the government.	• Profitability Ratios
7.	Managers:-		
	a. Production Managers	They are interested to know about the data regarding input output, production quantities etc.	• Input Output Ratios • Raw Material Consumption Ratios
	b. Sales Manager	Data related to units sold for various years, other associated figures and predicted future sales figure will be an area of interest for them	• Turnover Ratios • Expenses Ratios
	c. Financial Manager	They are interested to know various ratios for their future predictions of financial requirement.	• Profitability Ratios • Turnover Ratios • Capital Structure Ratios
	d. Chief Executive/General Manger	They will try to assess the complete perspective of the company, starting from Sales, Finance, Inventory, Human Resources, Production etc	• All Ratios

Applications of Ration Analysis

A popular technique of analysing the performance of a business concern is that of Financial Ratio Analysis. As a tool of Financial Management, they are of crucial significance.

The important of Ratio Analysis lies in the fact that it presents facts on a comparative basis and enables drawing of inferences regarding the performance of a firm.

The Ratio Analysis is relevant in assessing the performance of a firm in respect of following aspects:-

- Liquidity Position
- Long-Term solvency
- Operating Efficiency
- Overall Profitability
- Inter-firm comparison
- In Budgeting

Limitations of Financial Ratio Analysis

- Reliability of ratio depends upon the reliability of the original data / information collected.
- Increases, decreases and constant changes in the price distort the comparison over period of years
- The benefits of ratio analysis depends on correct interpretation. Many times it is observed that due to small errors in original data it leads to false conclusions.
- A ratio-analysis is not an ultimate yardstick for assessing the performance of the firm.

PART II
FINANCIAL RATIO ANALYSIS OF REAL WORLD COMPANIES

I. Introduction to BMW Co.

BMW is also called ***Bayerische Motoren Werke*.** Bayerische Motorenwerke in English is called ***Bavarian Motor Works*.** It is a German-based company, and its headquarter is in Munich, Bavaria, Germany. This company makes luxurious cars for the world, and it came into existence in 1916 started with manufacturing aircraft. They produced aircraft engines from 1917-1918 and resumed from 1933-1945.

BMW produces two kinds of products:

- Cars
- Motorcycles

Cars Category:-

1. Rolls Royce
2. Mini
3. BMW i
4. BMW
5. Alpina

Motorcycles:-

- BMW Motorrad

The special fascination of the BMW Group not only lies in its products and technology, but also in the company's history, written by inventors, pioneers and brilliant designers. Today, the BMW Group, with more than 30 production and assembly facilities as well as a global sales network, is the world's leading manufacturer of premium automobiles and motorcycles, and provider of premium financial and mobility services.

Financial Statements of BMW

BMW Income Statement

EUR, '000 000	2016	2017	2018	2019
Total Revenue	**94,163.00**	**98,282.00**	**96,855.00**	**1,04,210.00**
Revenue	94,163.00	98,282.00	96,855.00	1,04,210.00
Other Revenue, Total	0.00	0.00	0.00	0.00
Cost of Revenue, Total	75,442.00	78,329.00	78,477.00	86,147.00
Gross Profit	**18,721.00**	**19,953.00**	**18,378.00**	**18,063.00**
Total Operating Expenses	**9,335.00**	**10,054.00**	**9,445.00**	**10,652.00**
Selling/General/Admin. Expenses, Total	9,158.00	9,560.00	9,568.00	9,367.00
Research & Development	0.00	0.00	0.00	0.00
Depreciation / Amortization	0.00	0.00	0.00	0.00
Interest Expense (Income) - Net Operating	-13.00	-36.00	-50.00	-33.00
Unusual Expense (Income)	-69.00	-59.00	-63.00	-124.00
Other Operating Expenses, Total	259.00	589.00	-10.00	1,128.00
Operating Income	**9,386.00**	**9,899.00**	**8,933.00**	**7,411.00**
Interest Income (Expense), Net Non-Operating	363.00	842.00	785.00	-67.00
Gain (Loss) on Sale of Assets	0.00	0.00	0.00	0.00
Other, Net	-84.00	-66.00	-91.00	-226.00
Net Income Before Taxes	**9,665.00**	**10,675.00**	**9,627.00**	**7,118.00**
Provision for Income Taxes	2,755.00	2,000.00	2,530.00	2,140.00
Net Income After Taxes	**6,910.00**	**8,675.00**	**7,097.00**	**4,978.00**
Minority Interest	-47.00	-86.00	-90.00	-107.00
Equity In Affiliates	0.00	0.00	0.00	0.00
U.S GAAP Adjustment	0.00	0.00	0.00	0.00
Net Income Before Extraordinary Items	**6,863.00**	**8,589.00**	**7,007.00**	**4,871.00**

Total Extraordinary Items	0.00	0.00	-33.00	44.00
Net Income	**6,863.00**	**8,589.00**	**6,974.00**	**4,915.00**
Total Adjustments to Net Income	0.00	0.00	0.00	0.00
Income Available to Common Excluding Extraordinary Items	**6,863.00**	**8,589.00**	**6,974.00**	**4,915.00**
Dilution Adjustment	0.00	0.00	0.00	0.00
Diluted Net Income	**6,863.00**	**8,589.00**	**6,974.00**	**4,915.00**
Diluted Weighted Average Shares	656.80	657.11	657.60	658.12
Diluted EPS Excluding Extraordinary Items	**10.45**	**13.07**	**10.61**	**7.47**
DPS - Common Stock Primary Issue	3.50	4.00	3.50	2.50
Diluted Normalized EPS	10.37	13.00	10.58	7.53

BMW Balance Sheet

EUR, '000 000	2016	2017	2018	2019
Total Current Assets	**66,864.00**	**73,542.00**	**84,736.00**	**90,630.00**
Cash and Short Term Investments	**14,945.00**	**17,004.00**	**17,654.00**	**17,991.00**
Cash	0.00	0.00	0.00	0.00
Cash & Equivalents	7,880.00	9,039.00	10,979.00	12,036.00
Short Term Investments	7,065.00	7,965.00	6,675.00	5,955.00
Total Receivables, Net	**34,991.00**	**36,346.00**	**42,624.00**	**45,134.00**
Accounts Receivables - Trade, Net	33,053.00	34,780.00	41,246.00	43,925.00
Other Receivables	1,938.00	1,566.00	1,378.00	1,209.00
Total Inventory	11,841.00	12,707.00	14,248.00	15,891.00
Prepaid Expenses	0.00	0.00	0.00	0.00
Other Current Assets, Total	5,087.00	7,485.00	10,210.00	11,614.00
Total Non-Current Assets	**1,21,671.00**	**1,21,964.00**	**1,24,202.00**	**1,37,404.00**
Property/Plant/Equipment, Total - Net	**55,749.00**	**54,728.00**	**58,060.00**	**65,854.00**
Property/Plant/Equipment, Total - Gross	97,377.00	97,388.00	1,01,155.00	1,10,615.00
Accumulated Depreciation, Total	-41,628.00	-42,660.00	-43,095.00	-44,761.00
Goodwill, Net	364.00	380.00	380.00	380.00
Intangibles, Net	7,793.00	9,084.00	10,591.00	11,349.00
Long Term Investments	5,811.00	5,828.00	4,373.00	5,272.00
Note Receivable - Long Term	48,032.00	48,321.00	48,313.00	51,030.00
Other Long Term Assets, Total	3,922.00	3,623.00	2,485.00	3,519.00
Other Assets, Total	0.00	0.00	0.00	0.00
Total Assets	**1,88,535.00**	**1,95,506.00**	**2,08,938.00**	**2,28,034.00**
Total Current Liabilities	**67,989.00**	**71,765.00**	**75,625.00**	**82,625.00**
Accounts Payable	9,226.00	10,604.00	9,669.00	10,182.00
Payable/Accrued	0.00	0.00	0.00	0.00
Accrued Expenses	4,331.00	2,359.00	4,214.00	0.00
Notes Payable/Short Term Debt	3,852.00	4,461.00	2,480.00	2,615.00
Current Port. of LT Debt/Capital Leases	36,818.00	36,266.00	35,699.00	42,329.00
Other Current liabilities, Total	13,762.00	18,075.00	23,563.00	27,499.00
Non Current Liabilities	**73,438.00**	**70,070.00**	**80,227.00**	**86,085.00**
Long Term Debt	53,730.00	52,831.00	63,734.00	69,156.00
Capital Lease Obligations	0.00	0.00	9.00	544.00
Deferred Income Tax	2,795.00	2,157.00	1,773.00	632.00
Minority Interest	255.00	436.00	529.00	583.00
Other Liabilities, Total	16,658.00	14,646.00	14,182.00	15,170.00

Total Liabilities	**1,41,427.00**	**1,41,835.00**	**1,55,852.00**	**1,68,710.00**
Total Equity	**47,108.00**	**55,755.00**	**59,418.00**	**59,324.00**
Redeemable Preferred Stock, Total	0.00	0.00	0.00	0.00
Preferred Stock - Non Redeemable, Net	0.00	0.00	0.00	0.00
Common Stock, Total	657.00	658.00	658.00	659.00
Additional Paid-In Capital	2,047.00	2,084.00	2,118.00	0.00
Retained Earnings (Accumulated Deficit)	44,445.00	52,899.00	57,980.00	59,828.00
Treasury Stock - Common	0.00	0.00	0.00	0.00
ESOP Debt Guarantee	0.00	0.00	0.00	0.00
Unrealized Gain (Loss)	52.00	93.00	-1.00	29.00
Other Equity, Total	-93.00	21.00	-1,337.00	-1,192.00
Total Liabilities & Shareholders' Equity	**1,88,535.00**	**1,97,590.00**	**2,15,270.00**	**2,28,034.00**
Total Common Shares Outstanding	657.00	658.00	658.00	659.00
Total Preferred Shares Outstanding	0.00	0.00	0.00	0.00

BMW Cash Flow Statement

EUR, '000 000	2016	2017	2018	2019
Net Income/Starting Line	**6,863.00**	**8,589.00**	**6,974.00**	**4,915.00**
Cash From Operating Activities	**3,211.00**	**5,973.00**	**5,026.00**	**3,579.00**
Depreciation/Depletion	4,998.00	4,822.00	5,113.00	6,017.00
Amortization	0.00	0.00	0.00	0.00
Deferred Taxes	85.00	-559.00	312.00	-1,176.00
Non-Cash Items	-7,670.00	-6,230.00	-5,957.00	-2,882.00
Cash Receipts	0.00	0.00	0.00	0.00
Cash Payments	0.00	0.00	0.00	0.00
Cash Taxes Paid	2,417.00	2,301.00	1,972.00	3,389.00
Cash Interest Paid	118.00	165.00	136.00	199.00
Changes in Working Capital	-1,112.00	-735.00	-1,506.00	-3,402.00
Cash From Investing Activities	**-5,863.00**	**-6,163.00**	**-7,363.00**	**-7,284.00**
Capital Expenditures	-5,823.00	-7,112.00	-7,777.00	-6,902.00
Other Investing Cash Flow Items, Total	-40.00	949.00	414.00	-382.00
Cash From Financing Activities	**4,393.00**	**1,572.00**	**4,296.00**	**4,790.00**
Financing Cash Flow Items	-98.00	-127.00	-111.00	-166.00
Total Cash Dividends Paid	-2,121.00	-2,324.00	-2,630.00	-2,366.00
Issuance (Retirement) of Stock, Net	0.00	0.00	0.00	0.00
Issuance (Retirement) of Debt, Net	6,612.00	4,023.00	7,037.00	7,322.00
Foreign Exchange Effects	17.00	-223.00	-19.00	-28.00
Net Change in Cash	**1,758.00**	**1,159.00**	**1,940.00**	**1,057.00**
Beginning Cash Balance	0.00	7,880.00	9,039.00	10,979.00
Ending Cash Balance	0.00	9,039.00	10,979.00	12,036.00
Free Cash Flow	0.00	-1,139.00	-2,751.00	-3,323.00
Free Cash Flow Growth	0.00	0.00	-142.00	-21.00
Free Cash Flow Yield	0.00	0.00	-6.00	-13.00

BMW Performance Ratios

	2016	2017	2018	2019
Profitability				
ROCE (ROI)	8%	8%	6%	5%
ROS	10%	10%	9%	7%
Gross margin	20%	20%	19%	17%
Liquidity				
Current ratio	0.98	1.02	1.12	1.10
Quick ratio	0.81	0.85	0.93	0.90
Activity				
Asset turnover	0.78	0.78	0.69	0.72
Receivables days	135.63	134.98	160.63	158.08
Inventory days	57.29	59.21	66.27	67.33
Payables days	44.64	49.41	44.97	43.14
Solvency				
Debt-to-equity ratio	163%	131%	140%	145%
Interest cover	25.86	11.76	11.38	0.00

Calculation of Performing Ratios

❖ Profitability Ratios

i. Return on Capital Employed (ROCE) = Operating Profit / (Non-Current Liabilities + Total Equity) %

ii. Return on sales (ROS) = operating profit / revenue %

iii. Gross margin = gross profit/ revenue %

❖ Liquidity Ratios

i. Current ratio = current assets / current liabilities
ii. Quick ratio= (current assets – inventory) / current liabilities

❖ Activity Ratios

i. Asset turnover = revenue / (non-current liabilities + total equity)
ii. Receivables days = receivables / credit sales × 365 days
iii. Inventory days = inventory / cost of sales × 365 days
iv. Payable days = payables / purchases (or cost of sales) × 365 days

❖ Solvency Ratios

i. Debt-to-equity = non-current liabilities / ordinary shareholders funds %
ii. Interest cover = operating profit / finance costs

Interpretation of the Performing Ratios

❖ Return on Capital Employed (ROCE): While there is no industry standard, a higher return on capital employed suggests a more efficient company, at least in terms of capital employment. However, a lower number may also be indicative of a company with a lot of cash on hand since cash is included in total assets. As a result, high levels of cash can sometimes skew this metric.

In 2016 the ROCE is 8% , in 2017 its 8%, in 2018 its 6% and in 2019 its 5%.The ROCE was declining from 8% to 5% , which means Cash and Cash Equivalents are increasing from year on year.

❖ Return on Sales (ROS) : It measures the performance of a company by analysing the percentage of total revenue that is converted into operating profits. ROS is used as an indicator of both efficiency and profitability as it shows how effectively a company is producing its core products and services and how its management runs the business.

ROS in the years 2016 & 2017 were 20% and in the years 2018 & 2019 is 19% and 17% respectively. The ROS declined 1% in 2018 and 3% in 2019 compared to 2016 & 2017, which means company's capacity to get higher returns from total revenue is declining owing to increase in Operating Expenses in the years 2018 and 2019.

❖ Gross Margin : Gross margin, which may also be called gross profit margin, looks at a company's gross profit compared to its revenue or sales and is expressed as a percentage. This figure can help companies

understand whether there are any inefficiencies and if cuts are required to address them and, therefore, increase profits.

In the years 2016 & 2017 the Gross Margin(%) was 20% , in the year 2018 it was 19% and in 2019 its 17%. The Gross Margin is decreased by 1% in 2018 and 2% in 2019 on year on year basis. The Gross Profits are decreasing since 2018 and Cost of Revenue are also increasing, therefore the Gross Margin is declining from year to year in 2018 & 2019.

- Current Ratio: A generally accepted current ratio is 2:1. But whether or not a specific ratio is satisfactory depends on the nature of the business and characteristics of its current assets and liabilities.

  A higher current ratio indicates that a company has more liquid assets available to pay off its short-term debts.

  In the year 2016 the Company's Current Ration was 0.98 due to the Current Liabilities were more than that of Current Assets.

  In the year 2017 the company's Current Ratio increased to 1.02 due to increase in Current Assets although the Current Liabilities were also increased the change in percentage was significant in Current Assets.

  In the Year 2018 Current Assets ration increased to 1.12 due to increase in Current Assets although the Current Liabilities were also increased the change in percentage was significant in Current Assets.

  In the Year 2019 Current Assets ration decreased to 1.10 due to increase in Current Liabilities although the Current Assets were also increased the change in percentage was significant in Current Liabilities.

- Quick Ratio: an Quick Ratio of 1:1 is considered satisfactory unless the majority of quick assets are in accounts receivables and the pattern of accounts receivable collection lags behind the schedule for psying current liabilities.

  In the year 2016 Quick Ratio is 0.81 which is less than the desirable ratio of 1. The inventory at the end of the year and the current liabilities are more than current assets.

  In the year 2017 Quick Ratio is 0.85 which is less than the desirable ratio of 1 even though it's improved by 0.04. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased the change in percentage was significant in Current Liabilities and Inventory at the year end.

  In the year 2018 Quick Ratio is 0.93 which is less than the desirable ratio of 1 even though it's improved by 0.08. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased the change in percentage was significant in Current Liabilities and Inventory at the year end.

  In the year 2019 Quick Ratio is 0.90 which is less than the desirable ratio of 1 and decreased by 0.03. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased the change in percentage was significant in Current Liabilities and Inventory at the year end.

- Asset Turnover Ratio: The asset turnover ratio measures how efficiently a company uses its assets to generate sales or revenue. It is calculated by dividing a company's net sales or revenue by its average total assets1. A higher asset turnover ratio indicates that a company is using its assets more efficiently to generate sales.

  In the year 2016 & 2017 the Asset Turnover was 0.78 because there was an increment in Current Assets in year 2017 but the Non-Current Liabilities and Equity were also increased.

  In the year 2018 the Asset Turnover Ratio was decreased by 0.09 to 0.69 due to significant increase in Non-Current Liabilities and Equity and decrease in Revenue.

  Again in the year 2019 Asset Turnover increased by 0.03 to 0.72 due to significant increase in Revenues and increase in Non-Current Liabilities but Equities were decreased.

- Receivable Days: The average collection period measures the average number of days it takes to collect account receivable. This ratio is also referred to as the number of days of receivable and the number of day's sales in receivables.

  In the year 2016 the Receivable Days was ~=136 days.

  In the year 2017 the Receivable Days was ~= 135 days, 1day decrement compared to 2016 due to increase in both turnover as well as net receivables.

  In the year 2018 the Receivable Days were increased to ~= 161 days due to decrease in Revenues but Net Receivables increased.

  In the year 2019 the Receivable Days were decreased to ~=158 days, 2 days decrement from previous year. Because both Revenues and Net Receivables increased but the Revenues increased significantly than the Net Receivables.

- Inventory Days: This ratio indicates that how fast inventory is used or sold. Minimum Inventory Days indicates the that our stock is selling fast and is very good from the view point of liquidity. An increase in Inventory days indicates that our inventory is not used/sold/lost and stays in warehouses for a long time.

  In the year 2016 the Inventory Days of the company is ~=57 days which is good in manufacturing and Automobile industry.

  In the year 2017 the Inventory days were ~=59 days, 2 days of increment due to increase in inventory at the year end (YoY).

  In the year 2018 the Inventory days were ~=66 days, 7 days of increment due to increase in inventory at the year end (YoY).

  In the year 2019 the Inventory days were ~=67 days, 1 days of increment due to increase in inventory at the year end (YoY).

- Payable days: The firm can compare what credit period it receives from the suppliers and what it offers to the customers. Also it can compare the average credit period offered to the customers in the industry to which belongs.

  In the year 2016 the Payable days were ~= 45 days.

  In the year 2017 the Payable days were ~= 49 days, increment of 4 days because both Payables and Cost of Revenues were also increased.

  In the year 2018 the Payable days were ~=45 days , decrement of 4 days because Payables were decreased but Cost of Revenues were increased.

  In the year 2019 the Payable days were ~=43 days , decrement of 4 days because both Payables and Cost of Revenues were Increased, although percentage change in cost of revenues is significantly higher than the Payables.

- Debt-to-Equity Ratio: A high debt to equity ratio here means less protection for creditors, a low ratio, on the other hand, indicates a wider safety cushion(i.e., creditors feel the owners funds can help absorb possible losses of income and capital).This ratio indicates the proportion of debt fund in relation to equity. This ratio often referred in capital structure decision as well as in legislation dealing with the capital structure decisions (i.e., issue of shares and debentures). Lenders are also very keen to know this ratio since it shows relative weights of debt and equity. Debt equity ratio is the indicator of firm's financial leverage.

  In the year 2016 Debt-to-Equity ratio is 1.63 or 163% because the Ordinary Shareholders Funds are significantly lower than Non-Current Liabilities.

  In the year 2017 Debt-to-Equity ratio is 1.31 or 131% because the Ordinary Shareholders Funds increased while Non-Current Liabilities decreased.

  In the year 2018 Debt-to-Equity ratio is 1.40 or 140% because the Ordinary Shareholders Funds increased but percentage increase in Non-Current Liabilities are significantly more than that of Ordinary Shareholders Funds.

  In the year 2019 Debt-to-Equity ratio is 1.45 or 145% because the Ordinary Shareholders Funds decreased but there is an increase in Non-Current Liabilities during the year.

- Interest Cover: Earnings before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible funds. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of interest charges. A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if Earning before interest and taxes suffer a considerable decline. Lower ratio means excessive use of debt or inefficient operations.

  In the year 2016 the Interest Coverage Ratio is 25.86, we can cover Interest Expense out of Operating Income

  In the year 2017 the Interest Coverage Ratio is 11.76, we can cover Interest Expense out of Operating Income

  In the year 2018 the Interest Coverage Ratio is 11.38, we can cover Interest Expense out of Operating Income

  In the year 2019 the Interest Coverage Ratio is 0.00 because we have Interest Expense in negative figure.

II. Volkswagen :-

Volkswagen is a German motor vehicle manufacturer headquartered in Wolfsburg, Lower Saxony, Germany. Founded in 1937 by the German Labour Front under the Nazi Party and revived into a global brand post-World War II by the British Army Officer Ivan Hirst, it is known for the iconic Beetle and serves as the flagship brand of the Volkswagen Group, the largest automotive manufacturer by worldwide sales in 2016 and 2017. The group's biggest market is in China, which delivers 40 percent of its sales and profits. Its name is derived from the German-language terms *Volk* and *Wagen*, translating to "people's car" when combined.

Volkswagen is the founding and namesake member of the Volkswagen Group, a large international corporation in charge of multiple car and truck brands, including Audi, SEAT, Porsche, Lamborghini, Bentley, Bugatti, Scania, MAN, and Skoda. Volkswagen Group's global headquarters are located in Volkswagen's historic home of Wolfsburg, Germany.

Volkswagen Group, as a unit, is Europe's largest motor vehicle manufacturer, with over 74,000 employees and over 7700 dealerships. For a long time, Volkswagen has had a market share over 20 percent.

Volkswagen has factories in many parts of the world, manufacturing or assembling vehicles for local markets. In addition to plants in Germany, Volkswagen has manufacturing or assembly facilities in Mexico, the United States, Slovakia, China, India, Russia, Malaysia, Brazil, Argentina, Portugal, Spain, Poland, the Czech Republic, Bosnia and Herzegovina, Kenya and South Africa. In 2011, Volkswagen was named in the top 25 largest companies in the world by the Forbes Global 2000.

Volkswagen was named the fourth most influential car of the 20th century in the 1999 Car of the Century competition, for its Volkswagen Type 1 "Beetle" model. It trailed only the Ford Model T, BMC Mini, and Citroen DS.
Volkswagen has produced four winners of the 50-year-old European Car of the Year award.

Financial Statements

Volkswagen Income Statement

EUR, '000 000	2016	2017	2018	2019
Total Revenue	**2,17,267.00**	**2,29,550.00**	**2,35,849.00**	**2,52,632.00**
Revenue	2,17,267.00	2,29,550.00	2,35,849.00	2,52,632.00
Other Revenue, Total	0.00	0.00	0.00	0.00
Cost of Revenue, Total	1,74,901.00	1,84,816.00	1,88,335.00	2,02,660.00
Gross Profit	**42,366.00**	**44,734.00**	**47,514.00**	**49,972.00**
Total Operating Expenses	**35,263.00**	**30,916.00**	**33,594.00**	**33,012.00**
Selling/General/Admin. Expenses, Total	30,976.00	29,592.00	29,891.00	29,263.00
Research & Development	0.00	0.00	0.00	0.00
Depreciation / Amortization	0.00	0.00	0.00	0.00
Interest Expense (Income) - Net Operating	1,446.00	339.00	744.00	2,208.00
Unusual Expense (Income)	1,150.00	1,148.00	936.00	233.00
Other Operating Expenses, Total	1,691.00	515.00	2,023.00	6,190.00
Operating Income	**7,103.00**	**13,818.00**	**13,920.00**	**16,960.00**
Interest Income (Expense), Net Non-Operating	1,338.00	1,442.00	3,444.00	2,600.00
Gain (Loss) on Sale of Assets	0.00	0.00	0.00	0.00
Other, Net	1,149.00	1,587.00	1,721.00	1,204.00
Net Income Before Taxes	**7,292.00**	**13,673.00**	**15,643.00**	**18,356.00**
Provision for Income Taxes	1,912.00	2,210.00	3,489.00	4,326.00
Net Income After Taxes	**5,380.00**	**11,463.00**	**12,154.00**	**14,030.00**
Minority Interest	10.00	10.00	17.00	143.00
Equity In Affiliates	0.00	0.00	0.00	0.00
U.S GAAP Adjustment	0.00	0.00	0.00	0.00
Net Income Before Extraordinary Items	**5,370.00**	**11,453.00**	**12,137.00**	**13,887.00**

Total Extraordinary Items	0.00	0.00	0.00	0.00
Net Income	**5,370.00**	**11,453.00**	**12,137.00**	**13,887.00**
Total Adjustments to Net Income	-226.00	-274.00	-310.00	-541.00
Income Available to Common Excluding Extraordinary Items	**5,144.00**	**11,179.00**	**11,827.00**	**13,346.00**
Dilution Adjustment	0.00	0.00	0.00	0.00
Diluted Net Income	**5,144.00**	**11,179.00**	**11,827.00**	**13,346.00**
Diluted Weighted Average Shares	501.30	501.30	501.30	501.30
Diluted EPS Excluding Extraordinary Items	**10.26**	**22.30**	**23.59**	**26.62**
DPS - Common Stock Primary Issue	2.06	3.96	4.86	6.56
Diluted Normalized EPS	25.88	34.22	31.77	31.02

Volkswagen Balance Sheet

EUR, '000 000	2016	2017	2018	2019
Total Current Assets	**1,55,722.00**	**1,60,112.00**	**1,83,536.00**	**1,87,463.00**
Cash and Short Term Investments	**48,629.00**	**46,394.00**	**57,604.00**	**54,908.00**
Cash	0.00	0.00	0.00	0.00
Cash & Equivalents	19,265.00	18,457.00	28,938.00	25,923.00
Short Term Investments	29,364.00	27,937.00	28,666.00	28,985.00
Total Receivables, Net	**68,116.00**	**73,187.00**	**80,186.00**	**85,018.00**
Accounts Receivables - Trade, Net	12,187.00	13,357.00	17,888.00	17,941.00
Other Receivables	55,929.00	59,830.00	62,298.00	67,077.00
Total Inventory	38,978.00	40,415.00	45,745.00	46,742.00
Prepaid Expenses	0.00	0.00	0.00	0.00
Other Current Assets, Total	-1.00	116.00	1.00	795.00
Total Non-Current Assets	**2,15,572.00**	**2,22,826.00**	**2,31,076.00**	**3,00,609.00**
Property/Plant/Equipment, Total - Net	**54,034.00**	**55,242.00**	**57,631.00**	**1,15,091.00**
Property/Plant/Equipment, Total - Gross	1,48,490.00	1,55,570.00	1,65,306.00	2,47,528.00
Accumulated Depreciation, Total	-94,456.00	-1,00,328.00	-1,07,675.00	-1,32,437.00
Goodwill, Net	23,558.00	23,442.00	23,317.00	23,247.00
Intangibles, Net	39,041.00	39,977.00	41,296.00	42,967.00
Long Term Investments	18,380.00	18,446.00	16,925.00	16,162.00
Note Receivable - Long Term	70,803.00	75,908.00	81,776.00	90,036.00
Other Long Term Assets, Total	9,756.00	9,811.00	10,131.00	13,106.00
Other Assets, Total	0.00	0.00	0.00	0.00
Total Assets	**3,71,294.00**	**3,82,938.00**	**4,14,612.00**	**4,88,072.00**
Total Current Liabilities	**1,77,515.00**	**1,60,389.00**	**1,67,968.00**	**1,67,924.00**
Accounts Payable	22,794.00	23,046.00	23,607.00	22,745.00
Payable/Accrued	0.00	0.00	0.00	0.00
Accrued Expenses	581.00	570.00	661.00	691.00
Notes Payable/Short Term Debt	0.00	0.00	0.00	0.00
Current Port. of LT Debt/Capital Leases	88,461.00	81,844.00	89,757.00	86,483.00
Other Current liabilities, Total	65,679.00	54,929.00	53,943.00	58,005.00
Total Non-Current Liabilities	**1,39,528.00**	**1,52,956.00**	**1,73,071.00**	**1,98,366.00**
Total Long Term Debt	**66,358.00**	**81,628.00**	**1,01,126.00**	**1,09,532.00**
Long Term Debt	65,872.00	81,200.00	1,00,727.00	1,04,324.00
Capital Lease Obligations	486.00	428.00	399.00	5,208.00
Deferred Income Tax	4,745.00	5,636.00	5,030.00	5,007.00
Minority Interest	221.00	229.00	225.00	1,870.00

Other Liabilities, Total	68,204.00	65,463.00	66,690.00	81,957.00
Total Liabilities	**3,17,043.00**	**3,13,345.00**	**3,41,039.00**	**3,66,290.00**
Total Equity	**92,689.00**	**1,08,848.00**	**1,17,117.00**	**1,21,781.00**
Redeemable Preferred Stock, Total	0.00	0.00	0.00	0.00
Preferred Stock - Non Redeemable, Net	0.00	0.00	0.00	0.00
Common Stock, Total	1,283.00	1,283.00	1,283.00	1,283.00
Additional Paid-In Capital	0.00	14,551.00	14,551.00	14,551.00
Retained Earnings (Accumulated Deficit)	85,415.00	81,368.00	91,105.00	96,929.00
Treasury Stock - Common	0.00	0.00	0.00	0.00
ESOP Debt Guarantee	0.00	0.00	0.00	0.00
Unrealized Gain (Loss)	-2.00	257.00	-2.00	60.00
Other Equity, Total	5,993.00	11,389.00	10,180.00	8,958.00
Total Liabilities & Shareholders' Equity	**4,09,732.00**	**4,22,193.00**	**4,58,156.00**	**4,88,071.00**
Total Common Shares Outstanding	501.00	501.00	501.00	501.00
Total Preferred Shares Outstanding	0.00	0.00	0.00	0.00

Volkswagen Cash Flow Statement

EUR, '000 000	2016	2017	2018	2019
Net Income/Starting Line	**7,292.00**	**13,673.00**	**15,643.00**	**18,356.00**
Cash From Operating Activities	**9,430.00**	**-1,186.00**	**7,272.00**	**17,984.00**
Depreciation/Depletion	17,207.00	18,296.00	18,723.00	20,474.00
Amortization	3,586.00	3,734.00	3,668.00	3,665.00
Deferred Taxes	0.00	0.00	0.00	0.00
Non-Cash Items	6,967.00	-9,298.00	97.00	1,672.00
Cash Receipts	0.00	0.00	0.00	0.00
Cash Payments	0.00	0.00	0.00	0.00
Cash Taxes Paid	3,315.00	3,664.00	3,804.00	2,914.00
Cash Interest Paid	0.00	0.00	0.00	0.00
Changes in Working Capital	-25,622.00	-27,591.00	-30,859.00	-26,183.00
Cash From Investing Activities	**-20,679.00**	**-16,508.00**	**-21,590.00**	**-21,146.00**
Capital Expenditures	-13,152.00	-13,052.00	-13,729.00	-14,230.00
Other Investing Cash Flow Items, Total	-7,527.00	-3,456.00	-7,861.00	-6,916.00
Cash From Financing Activities	**9,712.00**	**17,625.00**	**24,566.00**	**-865.00**
Financing Cash Flow Items	-4.00	1.00	-27.00	1,368.00
Total Cash Dividends Paid	-364.00	-1,332.00	-2,375.00	-2,899.00
Issuance (Retirement) of Stock, Net	0.00	3,473.00	1,491.00	0.00
Issuance (Retirement) of Debt, Net	10,080.00	15,483.00	25,477.00	666.00
Foreign Exchange Effects	-91.00	-727.00	-173.00	243.00
Net Change in Cash	**-1,628.00**	**-796.00**	**10,075.00**	**-3,784.00**
Beginning Cash Balance	0.00	19,253.00	18,863.00	29,707.00
Ending Cash Balance	0.00	18,457.00	28,938.00	25,923.00
Free Cash Flow	0.00	-14,238.00	-6,457.00	3,754.00
Free Cash Flow Growth	0.00	0.00	55.00	158.00
Free Cash Flow Yield	0.00	0.00	-9.00	7.00

Volkswagen Performance Ratios

	2016	2017	2018	2019
Profitability				
ROCE (ROI)	3%	5%	5%	5%
ROS	3%	6%	6%	7%
Gross margin	19%	19%	20%	20%
Liquidity				
Current ratio	0.88	1.00	1.09	1.12
Quick ratio	0.66	0.75	0.82	0.84
Activity				
Asset turnover	0.94	0.88	0.81	0.79
Receivables days	114.43	116.37	124.10	122.83
Inventory days	81.34	79.82	88.66	84.18
Payables days	47.57	45.51	45.75	40.96
Solvency				
Debt-to-equity ratio	151%	163%	169%	185%
Interest cover	5.31	9.58	4.04	6.52

Calculation of Performing Ratios

❖ Profitability Ratios

iv. Return on Capital Employed (ROCE) = Operating Profit / (Non-Current Liabilities + Total Equity) %

v. Return on sales (ROS) = operating profit / revenue %

vi. Gross margin = gross profit/ revenue %

❖ Liquidity Ratios

iii. Current ratio = current assets / current liabilities
iv. Quick ratio= (current assets – inventory) / current liabilities

❖ Activity Ratios

v. Asset turnover = revenue / (non-current liabilities + total equity)
vi. Receivables days = receivables / credit sales × 365 days
vii. Inventory days = inventory / cost of sales × 365 days
viii. Payable days = payables / purchases (or cost of sales) × 365 days

❖ Solvency Ratios

iii. Debt-to-equity = non-current liabilities / ordinary shareholders funds %
iv. Interest cover = operating profit / finance costs

Interpretation of the Performing Ratios

❖ Return on Capital Employed (ROCE): While there is no industry standard, a higher return on capital employed suggests a more efficient company, at least in terms of capital employment. However, a lower number may also be indicative of a company with a lot of cash on hand since cash is included in total assets. As a result, high levels of cash can sometimes skew this metric.

In 2016 the ROCE is 3% , in 2017 its 5%, in 2018 its 5% and in 2019 its 5%.The ROCE increased from 3% to 5% , which means Cash and Cash Equivalents are increasing from year on year.

❖ Return on Sales (ROS) : It measures the performance of a company by analysing the percentage of total revenue that is converted into operating profits. ROS is used as an indicator of both efficiency and profitability as it shows how effectively a company is producing its core products and services and how its management runs the business.

ROS in the years 2016 is 3%, 2017 is 6%, 2018 & 2019 is 6% and 7% respectively. The ROS increased from 3% in 2016 to 6% in the years 2017 & 2018 and then again increased to 7%, which means company's capacity to get higher returns from total revenue is increasing owing to decrease in Operating Expenses in the years 2017 and 2019.

❖ Gross Margin : Gross margin, which may also be called gross profit margin, looks at a company's gross profit compared to its revenue or sales and is expressed as a percentage. This figure can help companies

understand whether there are any inefficiencies and if cuts are required to address them and, therefore, increase profits.

In the years 2016 & 2017 the Gross Margin(%) was 19% , in the year 2018 it was 20% and in 2019 its 20%. The Gross Margin is increased to 20% in the years 2018 & 2019 from 19% in the years 2016 & 2017 on year on year basis. The Gross Profits are increasing since 2017 and Cost of Revenue are also increasing, therefore the Gross Margin is increasing or remaining the same from year to year in 2018 & 2019.

- Current Ratio: A generally accepted current ratio is 2:1. But whether or not a specific ratio is satisfactory depends on the nature of the business and characteristics of its current assets and liabilities.

  A higher current ratio indicates that a company has more liquid assets available to pay off its short-term debts.

  In the year 2016 the Company's Current Ration was 0.88 due to the Current Liabilities were more than that of Current Assets.

  In the year 2017 the company's Current Ratio increased to 1.00 due to increase in Current Assets although the Current Liabilities were also increased the change in percentage was significant in Current Assets.

  In the Year 2018 Current Assets ration increased to 1.09 due to increase in Current Assets although the Current Liabilities were also increased the change in percentage was significant in Current Assets.

  In the Year 2019 Current Assets ration increased to 1.12 due to increase in Current Assets although the Current Liabilities were also increased, the change in percentage was significant in Current Assets.

- Quick Ratio: an Quick Ratio of 1:1 is considered satisfactory unless the majority of quick assets are in accounts receivables and the pattern of accounts receivable collection lags behind the schedule for psying current liabilities.

  In the year 2016 Quick Ratio is 0.66 which is less than the desirable ratio of 1. The inventory at the end of the year and the current liabilities are more than current assets.

  In the year 2017 Quick Ratio is 0.75 which is less than the desirable ratio of 1 even though it's improved by 0.09. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased, the change in percentage was significant in Inventory at the year end.

  In the year 2018 Quick Ratio is 0.82 which is less than the desirable ratio of 1 even though it's improved by 0.07. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased the change in percentage was significant in Current Liabilities and Inventory at the year end.

  In the year 2019 Quick Ratio is 0.84 which is less than the desirable ratio of 1 and decreased by 0.03. The inventory at the end of the year and the current liabilities are more than current assets. Even though the Current Assets were also increased the change in percentage was significant in Current Liabilities and Inventory at the year end.

- Asset Turnover Ratio: The asset turnover ratio measures how efficiently a company uses its assets to generate sales or revenue. It is calculated by dividing a company's net sales or revenue by its average total assets1. A higher asset turnover ratio indicates that a company is using its assets more efficiently to generate sales.

  In the year 2016 the Asset Turnover was 0.94 & in 2017 it declined to 0.88 because there was an increment in Non Current Liabilities and Equity in year 2017.

  In the year 2018 the Asset Turnover Ratio was decreased by 0.07 to 0.81 due to significant increase in Non-Current Liabilities and Equity.

  Again in the year 2019 Asset Turnover decreased by 0.02 to 0.79 due to significant increase in Revenues and increase in Non-Current Liabilities.

- Receivable Days: The average collection period measures the average number of days it takes to collect account receivable. This ratio is also referred to as the number of days of receivable and the number of day's sales in receivables.

  In the year 2016 the Receivable Days was ~=114 days.

  In the year 2017 the Receivable Days was ~= 114 days, 2 day decrement compared to 2016 due to increase in both turnover as well as net receivables.

  In the year 2018 the Receivable Days were increased to ~= 124 days due to decrease in Revenues but Net Receivables increased.

  In the year 2019 the Receivable Days were decreased to ~=123 days, 1 day decrement from previous year. Because both Revenues and Net Receivables increased but the Revenues increased significantly than the Net Receivables.

- Inventory Days: This ratio indicates that how fast inventory is used or sold. Minimum Inventory Days indicates the that our stock is selling fast and is very good from the view point of liquidity. An increase in Inventory days indicates that our inventory is not used/sold/lost and stays in warehouses for a long time.

  In the year 2016 the Inventory Days of the company is ~=81 days which is good in manufacturing and Automobile industry.

  In the year 2017 the Inventory days were ~=80 days, 1 days of decrement due to increase in inventory at the year end (YoY).

  In the year 2018 the Inventory days were ~=89 days, 9 days of increment due to increase in inventory at the year end (YoY).

  In the year 2019 the Inventory days were ~=84 days, 5 days of increment due to increase in inventory at the year end (YoY).

- Payable days: The firm can compare what credit period it receives from the suppliers and what it offers to the customers. Also it can compare the average credit period offered to the customers in the industry to which belongs.

  In the year 2016 the Payable days were ~= 48 days.

  In the year 2017 the Payable days were ~= 46 days, decrement of 2 days because both Payables and Cost of Revenues were also increased.

  In the year 2018 the Payable days were ~=46 days , because Payables and Cost of Revenues were increased.

  In the year 2019 the Payable days were ~=41 days , decrement of 5 days because both Payables and Cost of Revenues were Increased, although percentage change in cost of revenues is significantly higher than the Payables.

- Debt-to-Equity Ratio: A high debt to equity ratio here means less protection for creditors, a low ratio, on the other hand, indicates a wider safety cushion(i.e., creditors feel the owners funds can help absorb possible losses of income and capital).This ratio indicates the proportion of debt fund in relation to equity. This ratio often referred in capital structure decision as well as in legislation dealing with the capital structure decisions (i.e., issue of shares and debentures). Lenders are also very keen to know this ratio since it shows relative weights of debt and equity. Debt equity ratio is the indicator of firm's financial leverage.

  In the year 2016 Debt-to-Equity ratio is 1.51 or 153% because the Ordinary Shareholders Funds are significantly lower than Non-Current Liabilities.

  In the year 2017 Debt-to-Equity ratio is 1.63 or 163% because the Ordinary Shareholders Funds and Non-Current Liabilities increased.

  In the year 2018 Debt-to-Equity ratio is 1.69 or 169% because the Ordinary Shareholders Funds increased but percentage increase in Non-Current Liabilities are significantly more than that of Ordinary Shareholders Funds.

  In the year 2019 Debt-to-Equity ratio is 1.85 or 185% because the Ordinary Shareholders Funds increased but percentage increase in Non-Current Liabilities are significantly more than that of Ordinary Shareholders Funds.

- Interest Cover: Earnings before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible funds. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of interest charges. A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earning before interest and taxes suffer a considerable decline. Lower ratio means excessive use of debt or inefficient operations.

  In the year 2016 the Interest Coverage Ratio is 5.31, which means we can cover Interest Expense through Operating Income.

  In the year 2017 the Interest Coverage Ratio is 9.58, which means we can cover Interest Expense through Operating Income.

  In the year 2018 the Interest Coverage Ratio is 4.04, which means we can cover Interest Expense through Operating Income. Interest Expense increased significantly in 2018 because Long Term Debt also increased significantly.

  In the year 2019 the Interest Coverage Ratio is 6.52, which means we can cover Interest Expense through Operating Income.

Part- III

Comparing the BMW and Volkswagen based on their Performing Ratios

Comparing the both Companies on their Performing Ratios

		2016	2017	2018	2019
Profitability					
ROCE (ROI)	**BMW**	8.00%	8.00%	6.00%	5.00%
	Volkswagen	3.00%	5.00%	5.00%	5.00%
ROS	**BMW**	10.00%	10.00%	9.00%	7.00%
	Volkswagen	3.00%	6.00%	6.00%	7.00%
Gross margin	**BMW**	20.00%	20.00%	19.00%	17.00%
	Volkswagen	19.00%	19.00%	20.00%	20.00%
Liquidity					
Current ratio	**BMW**	0.98	1.02	1.12	1.1
	Volkswagen	0.88	1	1.09	1.12
Quick ratio	**BMW**	0.81	0.85	0.93	0.9
	Volkswagen	0.66	0.75	0.82	0.84
Activity					
Asset turnover	**BMW**	0.78	0.78	0.69	0.72
	Volkswagen	0.94	0.88	0.81	0.79
Receivables days	**BMW**	135.63	134.98	160.63	158.08
	Volkswagen	114.43	116.37	124.1	122.83
Inventory days	**BMW**	57.29	59.21	66.27	67.33
	Volkswagen	81.34	79.82	88.66	84.18
Payables days	**BMW**	44.64	49.41	44.97	43.14
	Volkswagen	47.57	45.51	45.75	40.96
Solvency					
Debt-to-equity ratio	**BMW**	1.63	1.31	1.4	1.45
	Volkswagen	1.51	1.63	1.69	1.85
Interest cover	**BMW**	25.86	11.76	11.38	0
	Volkswagen	5.31	9.58	4.04	6.52

Graphical Comparison of BMW and Volkswagen

- Profitability Ratios

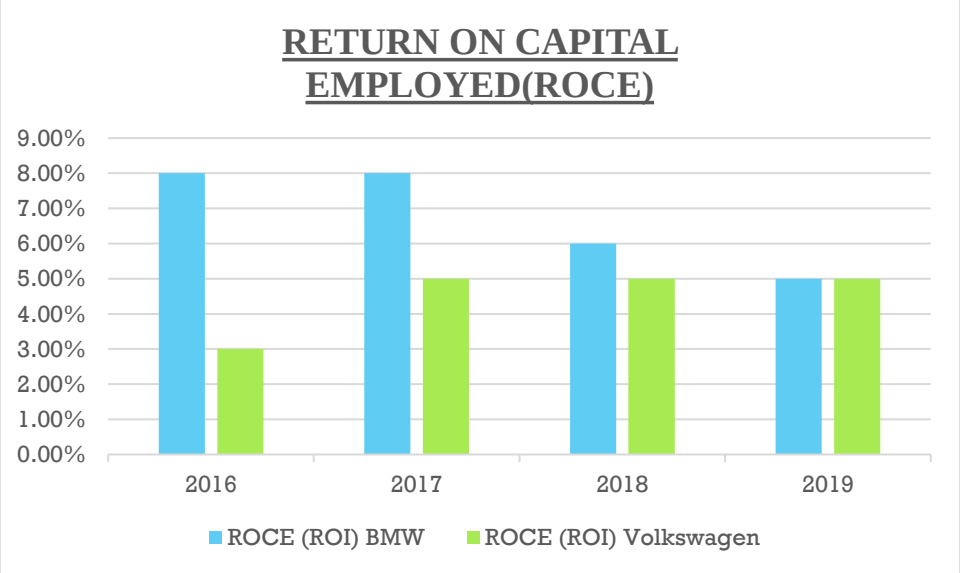

Chart 1.1 Comparison of BMW and Volkswagen on the basis of the performance in Return on Capital Employed(ROCE).

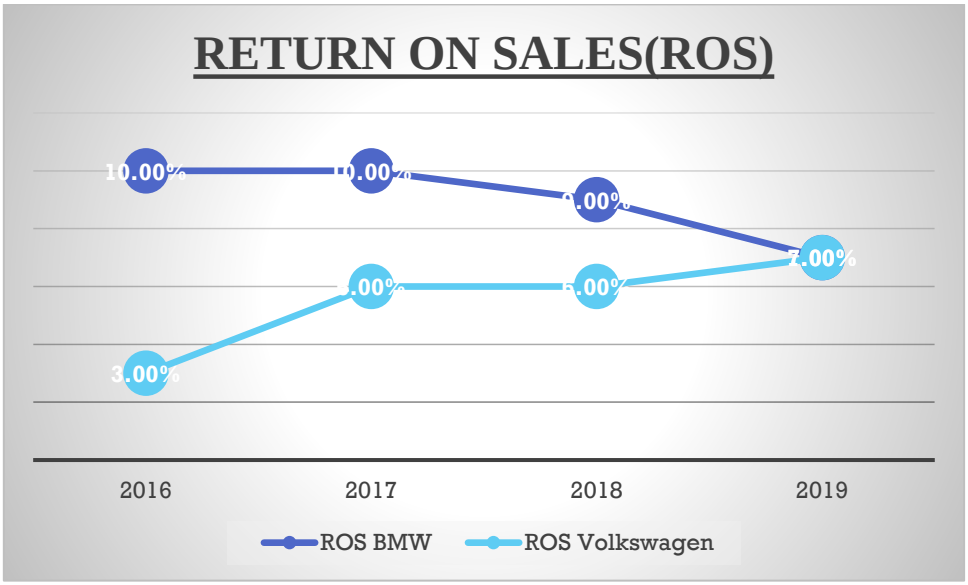

Chart 1.2 Comparison of BMW and Volkswagen on the basis of the performance in Return on Sales (ROS).

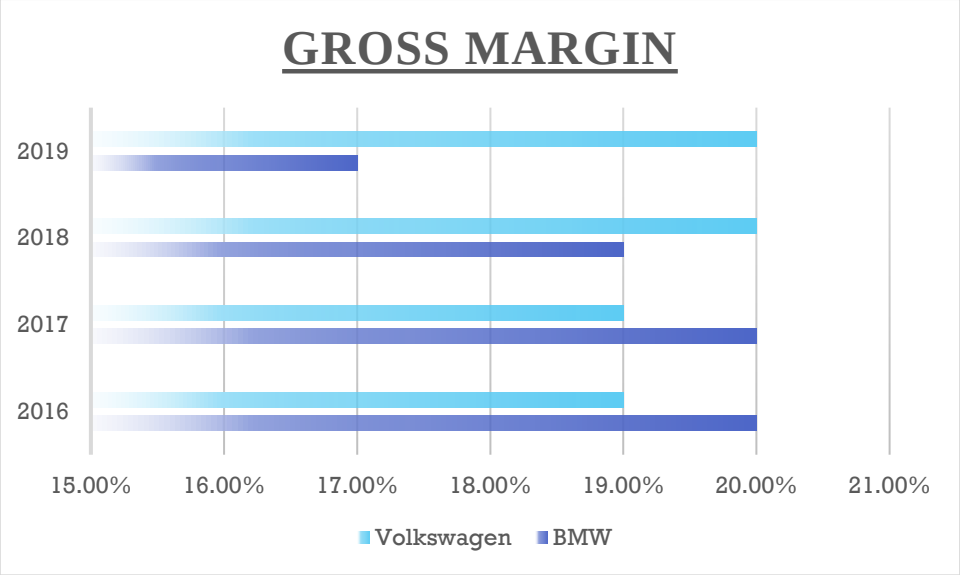

Chart 1.3 Comparison of BMW and Volkswagen on the basis of the performance in Gross Margin.

- Liquidity Ratios

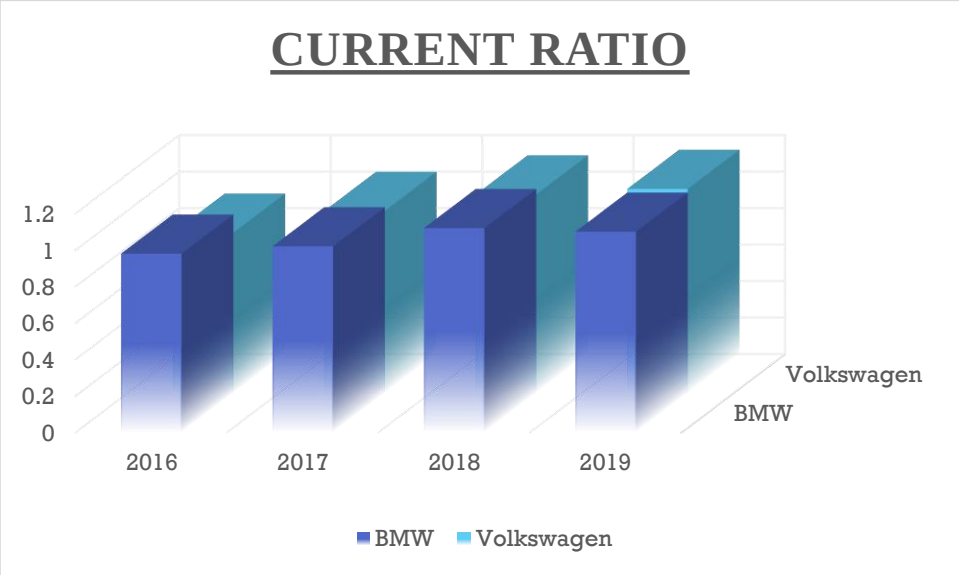

Chart 2.1 Comparison of BMW and Volkswagen on the basis of the performance in Current Ratio.

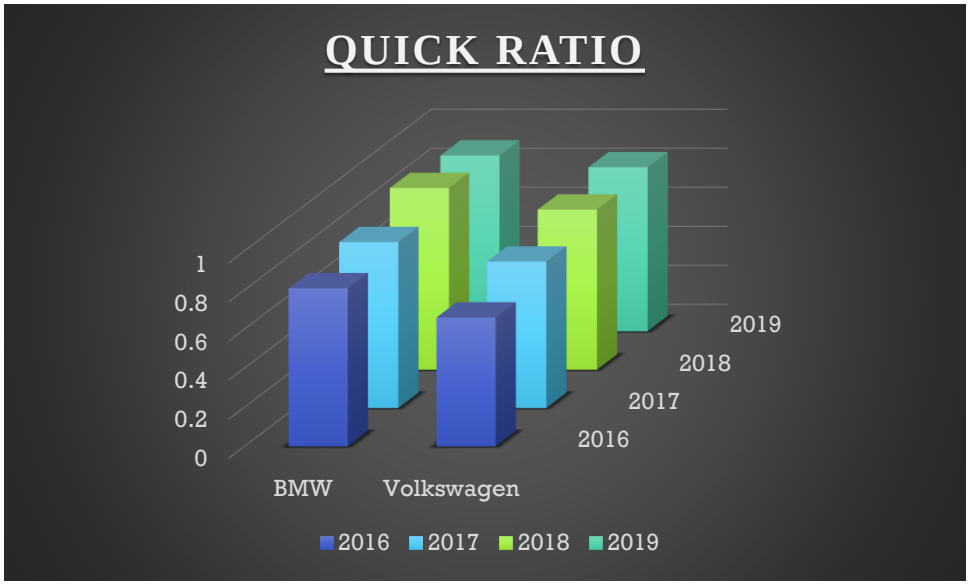

Chart 2.2 Comparison of BMW and Volkswagen on the basis of the performance in Quick Ratio.

- Activity Ratios

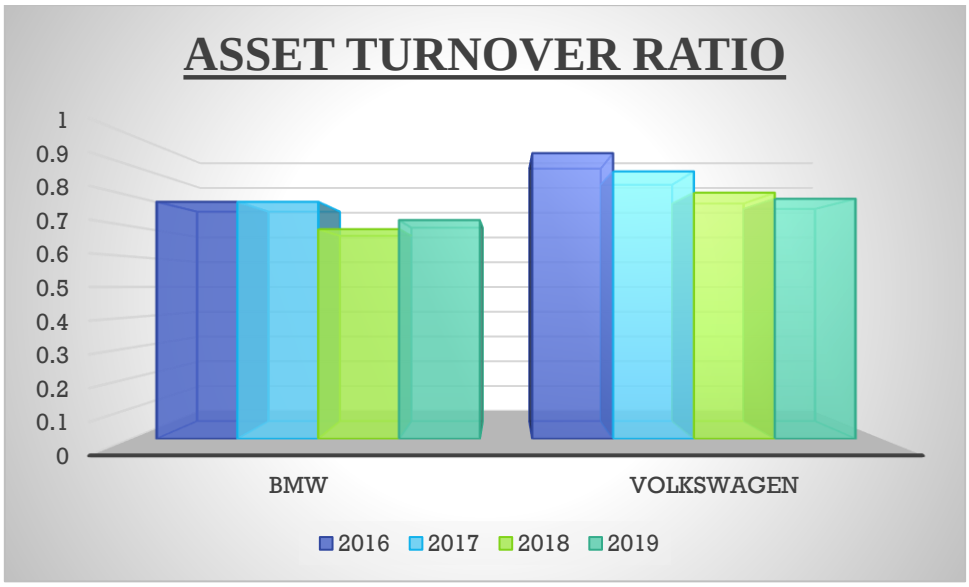

Chart 3.1 Comparison of BMW and Volkswagen on the basis of the performance in Asset Turnover Ratio.

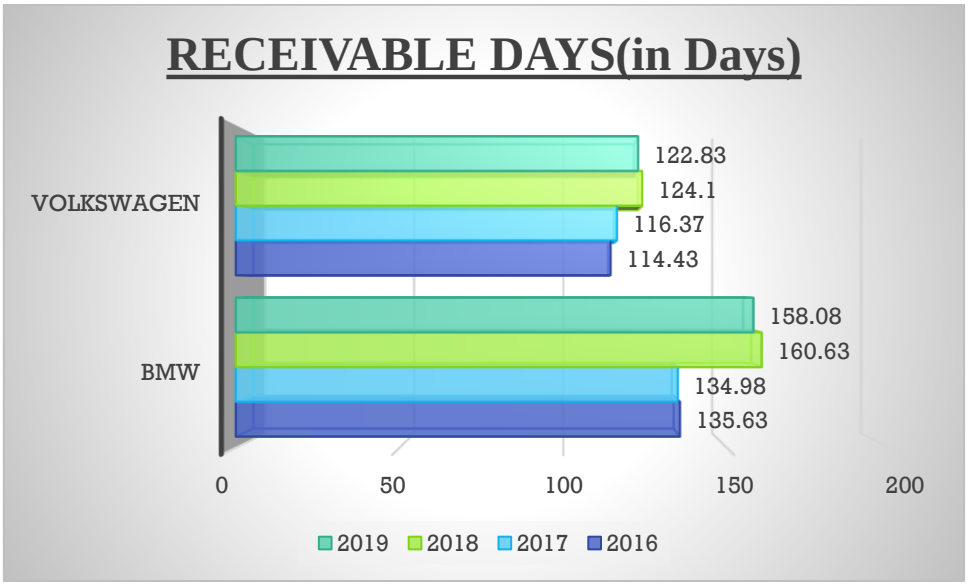

Chart 3.2 Comparison of BMW and Volkswagen on the basis of the performance in Receivable Days.

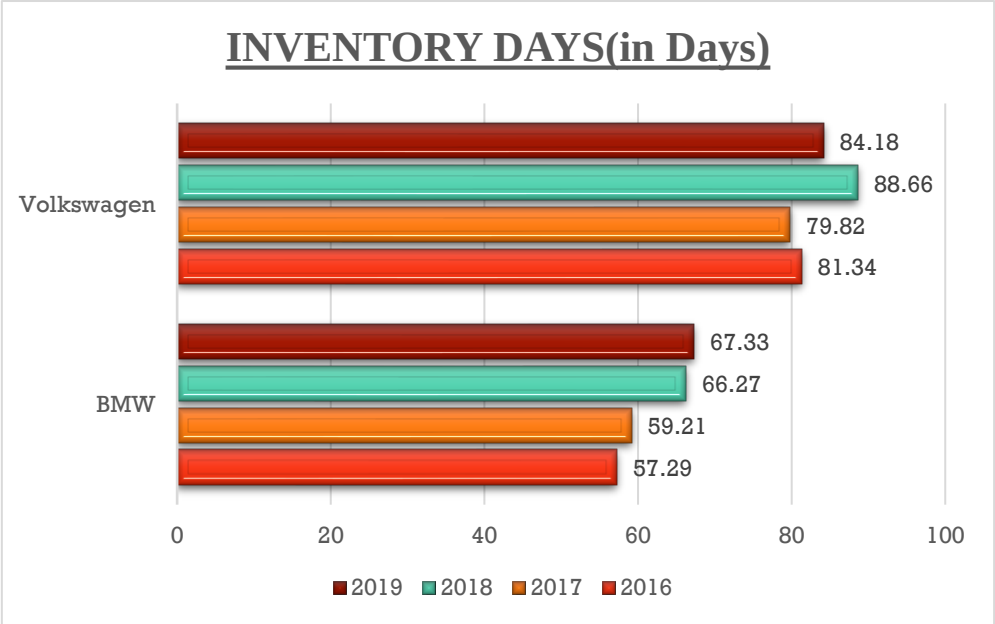

Chart 3.3 Comparison of BMW and Volkswagen on the basis of the performance in Inventory Days.

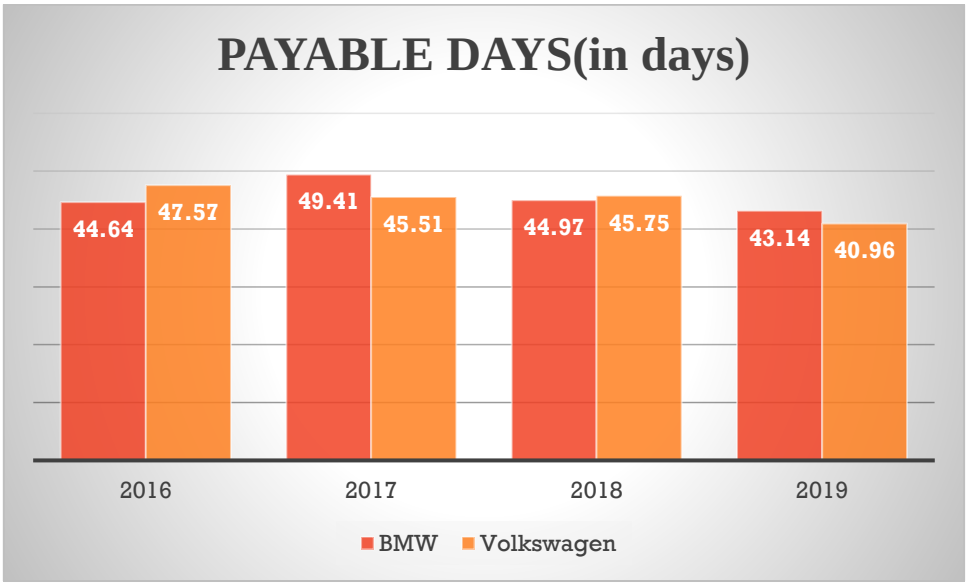

Chart 3.4 Comparison of BMW and Volkswagen on the basis of the performance in Payable Days.

- Solvency Ratios

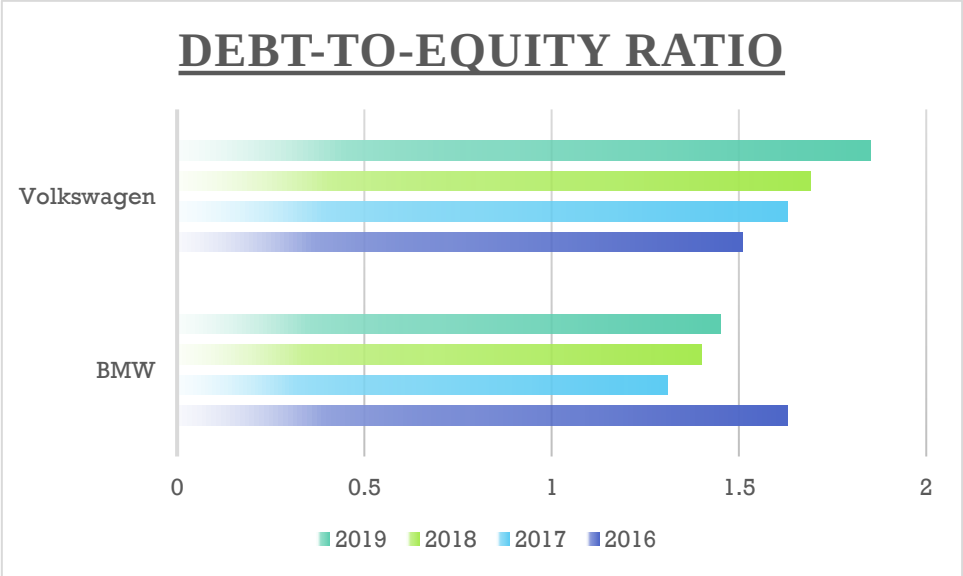

Chart 4.1 Comparison of BMW and Volkswagen on the basis of the performance in Debt-to-Equity Ratio.

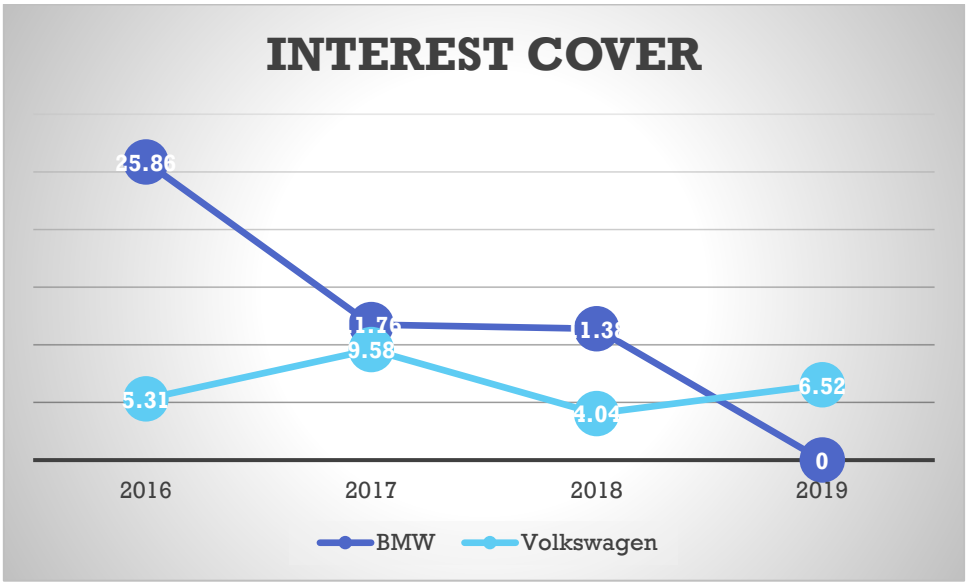

Chart 4.2 Comparison of BMW and Volkswagen on the basis of the performance in Interest Cover.

Conclusion

After calculation and graphically comparing the Key Performing Ratios of BMW and Volkswagen we can conclude with the followings:-

- BMW's Liquidity Ratios- Current Ratio and Quick Ratio are on or on the verge of achieving the desired resultant ratio. The firm has more working capital which is good for the creditors trust in case of future investments and liquidity.
- BMW's Activity Ratios- Asset Turnover ratio, Receivable Days, Inventory Days and Payable Days the firm is in great position. Asset Turnover is stable, Receivable Days are variably decreasing and Payables are on time. The firm needs to concentrate on decreasing Inventory days and has to spend on market research and marketing to increase the demand.
- BMW's Profitability Ratios-Return on Capital Employed (ROCE), Return on Sales (ROS) and Gross Margin Ratio keeps decreasing from Year on Year, the company needs to work on improving the revenues and also limiting the cost of revenues in balance.
- BMW's Solvency ratios- Debt-to-Equity ratio and Interest Cover are in great position because the company can afford to pay its Interest Expense on Debt out of Operating Income.
- Volkswagen's Liquidity Ratios- Current Ratio and Quick Ratio are on or on the verge of achieving the desired resultant ratio. The firm has more working capital which is good for the creditors trust in case of future investments and liquidity.
- Volkswagen's Activity Ratios- Asset Turnover ratio, Receivable Days, Inventory Days and Payable Days the firm is in great position. Asset Turnover is stable, Receivable Days are variably decreasing and Payables are on time. The firm needs to concentrate on decreasing Receivable days and has to have the policy on late payments by customers.
- Volkswagen's Profitability Ratios-Return on Capital Employed (ROCE), Return on Sales (ROS) and Gross Margin Ratio keeps Increasing from Year on Year, the company needs to work on improving the revenues and also limiting the cost of revenues in balance.
- Volkswagen's Solvency ratios- Debt-to-Equity ratio and Interest Cover are in great position because the company can afford to pay its Interest Expense on Debt out of Operating Income.

Thank You