VOLKSWAGEN AG[1]

1. HISTORY

Volkswagen Group or Volkswagen AG (VW AG) is one of world's leading manufacturers of automobiles and commercial vehicles and the largest carmaker in Europe. Its headquarters are located in Wolfsburg, Germany. Volkswagen was founded in 1937 by the German Labour Front and is the flagship marque of the Volkswagen Group.

Volkswagen translates into "The People's Car" and is intended to be Europe's car for the masses. The company's roots go back to the 1930s when Adolf Hitler order the production of a basic vehicle capable of transporting a family of five. World War II interrupted production of the first Volkswagen Type I or "Beetle" car whose mass production began in 1945. By the 1950s Volkswagen began exporting overseas, primarily to the US and South America and as VW grew, more models were introduced. In 1972, according to the management, the Volkswagen has been the most produced automobile of all times, breaking the 45-year-old record set by the famous Model T Ford. In 1974 the production of the Golf began, quickly becoming one of VW's best sellers.

However, the company also had face difficulties along the way. In the 1970s, Volkswagen faced a worldwide decline in vehicle sales as consumers demanded more economical vehicles. Moreover, the automaker was facing fierce competition from Japanese manufacturers. Despite the slowdown new models continued to be launched in the 1980s and 90s. Volkswagen also had advantages through Hollywood exposure, since it's models became iconic vehicles in many movies and a fashion statement among youngsters.

Today, the Wolfsburg plant is still the largest car factory under one roof worldwide. 60% of the VW AG's workforce works there and the company owns the local soccer team which plays at the highest level. What began 79 years ago as a project to launch low-cost Beetles has

[1] Case written by Ioannis Skarparis, Daniel Manta, Kim Maike Schäfer, Anneke Kilka. Universitat Pompeu Fabra, Barcelona School of Management, 2017.

evolved into a global empire that sells 10 million cars from 12 automotive brands[2] in 153 countries, produced 121 production plants.

2. INDUSTRY ANALYSIS AND COMPETITORS

The automobile manufacturing industry today is about highly sophisticated computers and new technologies embedded in complex machines. Throughout the past years, the industry recovered from the financial crisis with high profits, but it became increasingly unstable in terms of future predictions since it increasingly focuses on disruptive innovations aiming at transforming today's mobility concepts. With the rise of eMobility, the far-reaching Diesel scandal, connectivity concepts and autonomous driving, original equipment manufacturers (OEMs) constantly need to fight hard for staking their claim in an industry determined by emerging technologies. The industry can generally be divided into three major vehicle segments: the premium segment with the highest prices and margins (10% of the market), the value segment in the mid-price range (70%) and the entry segment with the least expensive vehicles (20%).

2.1 SWOT INDUSTRY

The major strengths of the automobile manufacturing industry are its high priced products with high margins and high implied profits. Sales have been increasing steadily throughout the past five years and are forecasted to further increase by 50% until 2020, promising an attractive economic growth especially in the Asian markets. Also, the industry offers continuous product innovation and technological advancement with a potential to transform today's mobility concepts. Referring to developing markets, the demand for VFM (value for money) vehicles is increasing constantly, offering a huge sales potential to all OEMs.

The major weakness of the industry is substantial costs from the highly capital and labor expenses which cause the need for extensive research and development activities to avoid mistaken product investments. Further necessities in the industry are high advertising expenses to claim stakes in the highly competitive global market. Planning becomes difficult due to long product cycles, presenting another hurdle that causes inertia and inflexibility throughout all OEMs.

[2] Volkswagen, Audi, Seat, Bentley, Bugatti, Lamborghini, Ducati, Scania, Skoda, Porsche, MAN

However, the industry, in particular, offers great opportunities in a new era of transportation, where traditional OEMs and software solution providers have to cooperate closely in order to come up with futuristics concepts like fully autonomous vehicles for growth markets like North America and China. Another opportunity is offered by the emerging markets which ask for an increased customer orientation and offer high sales numbers in the light vehicle segment.

A major threat of each OEM is posed by the fierce competition throughout the industry. The risk of losing global market share increased substantially due to the importance of strategic alliances in the software solutions sector, due to the increasing demand for innovation capacity, strict market regulations and other macroeconomic forces such as oil price fluctuations. Emerging competitors such as Apple and Google have the potential to decrease global market shares of traditional OEMs. Another threat is posed by the markets not accepting the new technologies. On the one hand, car buyers are demanding increasingly sophisticated technologies, whereas, on the other hand, they abandon technologies that are difficult to use. In general, the car manufacturing industry needs to address four major challenges to guarantee future profitability: complexity and cost pressure, diverging markets, digital demands and a shifting industry landscape.

To be able to compete in the automobile manufacturing industry, OEMs need to focus on a number of key success factors. In order to have the cash available for the substantial investments necessary, OEMs need to maximize sales and make use of economies of scales. They need to be fast, flexible and agile to react quickly to trends and changing market demands and to continuously improve customer experience. They need to constantly be ahead of innovation while being true to their DNA, by having a throughout market intelligence and outstanding analysis capacities.

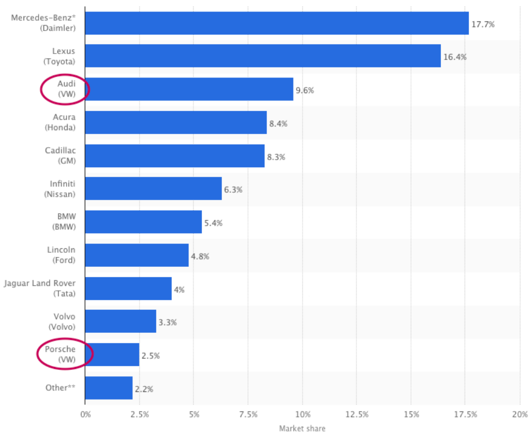


Figure 1. Luxury car market share U.S. 2015 by brand, main competitors (statista, 2016).

2.2 SALES EVOLUTION IN THE INDUSTRY

Automobile production and sales are highly cyclical and depend on general economic and social conditions and other factors, including consumer spending, interest rates, gasoline prices, environmental concerns, foreign oil dependency concerns and customer preferences. 2015 was marked as the sixth consecutive year of sales growth for the automotive industry (since 2009). Specifically, the US market broke all-time record with more than 17.39 units sold, 4.9% increase from 2014 sales. Both the US and China are considered the largest markets for the automotive industry. Furthermore, over the last three years, trucks sales outraged small and medium sized cars sales. Trucks are considered to be 55.7% of the overall market share whereas small and medium size cars took the second and third place. The major competitors in the automobile manufacturing industry ranked by operating revenues are Volkswagen (226 Mio EUR), Daimler (152 Mio EUR), BMW, Audi, Peugeot/Citroen and Renault (41 Mio EUR) (Amadeus, 2016).

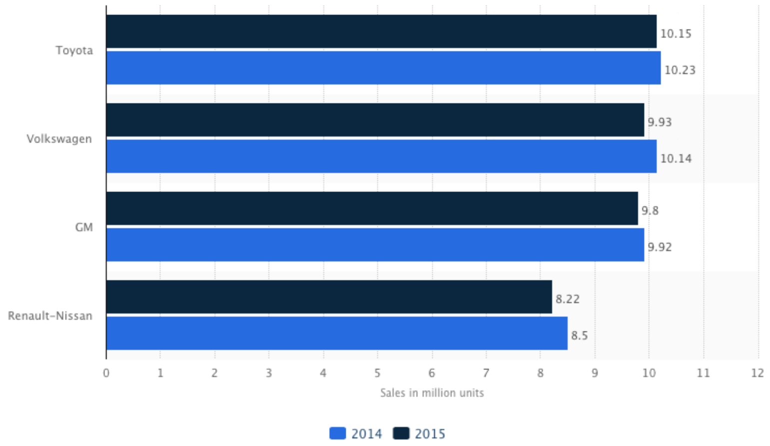


Figure 2. Leading motor vehicle manufacturers worldwide in 2014 and 2015, global sales in million units (statista, 2016).

The implications of global developments differ substantially by the specific automobile segments. In the premium segment finding profitable market niches and differentiation will be more and more difficult. Nevertheless, such differentiation is vital to maintaining a premium perception. Hence, OEMs need to provide offerings that enhance the customer experience and build loyalty, all of which require substantial investments. The demand for value segment vehicles switched from Europe to North America and the emerging markets. Furthermore, because of entry segment OEM intensify competition, clear product positioning, and competitive underlying cost are critical in this segment. OEMs have to manage a global sourcing network combined with the complexity of a global production footprint. The trends in the emerging markets present a solid growth opportunities for current players in the entry segment and present an incentive for value players to enter the segment to gain additional volume.

3. PRESENT SITUATION OF THE VOLKSWAGEN AG

The VW AG is formed of two main divisions, the Automotive and Financial Services Division.

Figure 3. Volkswagen Group

The Automotive division entails the Passengers Cars and Commercial Vehicles/Power Engineering business areas. Specifically, the automotive division consists of the development and production activities related to vehicles engines and sales of passengers' cars, light commercial vehicles, trucks, buses, motorcycles and other technological parts such as engines and turbines. The VW AG consists of a diverse variety of brands (Figure 3), each brand aims to satisfy a various group of customers and businesses. Financial Service offering of the VW AG include activities such as the financing of various dealers and customers, insurance packages, leasing, banking, fleet management and mobility offerings. Financial services are meant to accompany the automobile division and add value holistically across the chain. Specifically, the VW AG supports dealerships by enabling funding and allowing credit for customers in order to help them proceed purchasing cars and to ultimately increase sales. Furthermore, fleet services are available for any size of business in order to enhance trust between the VW AG and B2B customers.

3.1 FUTURE DEVELOPMENT OF PRODUCTS AND SERVICES

The VW AG aims at growing by continuously expanding their product ranges and offerings while sustaining others. Within 2015 there has been a decrease of 4.8% in the year-on-year sales volume mainly due to the Brazilian, Russian and Chinese markets. However, the European market along with Mexico showed highly promising growth rates as a total number of sales. Fortunately, foreign currency effects along with further enhancement of cost efficiency offset the negative effects from declining markets.

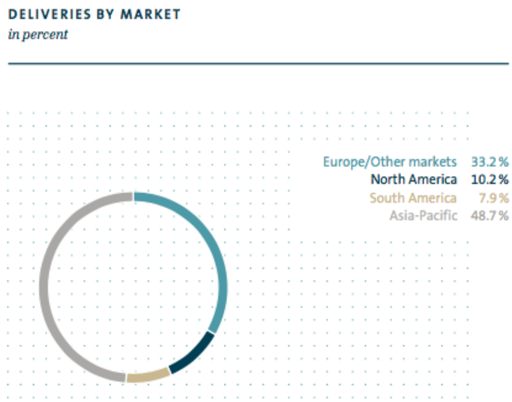


Figure 4. Deliveries by Market

Recently, the VW AG experienced some abnormalities due to a fraudulent software that was used in some car engines and that ultimately affected CO2 emissions. This scandal caused an increase in operational expenses due to the required modifications and repairments and legal risks arising from the misfortunate event.

3.2 DISTRIBUTION CHANNELS

Initially, component providers such as Bosch or Continental deliver to the VW AG production plants located worldwide for the assembling of the vehicles. The VW AG is then responsible for the marketing, sales and the export and import of its vehicles. Some major indirect distribution channels of the VW AG are its car dealers that are deeply integrated into the company’s wholesale system and that learn quickly and efficiently from the VW AG benchmarking processes and best practices.

Furthermore, the Internet technology offers new ways for customers to find, evaluate and buy new vehicles, thereby presenting an important tool for the VW AG to influence customers’ purchasing decisions. Indeed, the VW AG uses the opportunities that increasing digitization offers when it comes to direct distribution channels, creating a completely new product experience for consumers characterized by the seamless integration of the customer across all points of interaction. The rising importance of the Internet in the car manufacturing industry justifies the prediction of software-based companies to become the most relevant.

3.3 KEY SUCCESS FACTORS

The VW AG's key performance indicators (KPIs) confirm the industry related success factors determined previously: increase sales, economies of scales, agility and flexibility, outstanding customer experience and being ahead of innovation. Moreover, the VW AG's KPIs can be divided into financial and nonfinancial KPIs.

The major financial key performance indicator is the deliveries to the customers, hence the handovers of new vehicles to the end customer and the related sales revenues. These are indicators for the popularity of the VW AG vehicles and determine the company's competitive market position. Moreover, the VW AG's return on sales (ROS) is used to evaluate the company's operational efficiency and return on investment (ROI) to evaluate the efficiency of the firm's investments. The VW AG further uses profitability measures and its net cash flow in the automotive division to assess the liquidity and quality of its income in order to indicate whether the company is positioned to remain solvent.

The major non-financial key performance indicators are customers satisfaction, sustainability, environmental friendliness and indicators related to internal management processes. These processes refer to long-term unit sales plans, product programs, and capacity and utilization planning for individual locations.

In 2008 the VW AG set up ambitious goals to be achieved until 2018. First, the VW AG wants to become a world leader in customer satisfaction and quality by deploying intelligent innovation and technologies. Currently, the VW AG earns more than 70% of its revenue outside the euro zone. Second, the firm wants to increase sales numbers to more than ten million vehicles per year and want to achieve above average growth in the major growth markets. Third, the VW AG wants a long-term return on sales before tax of at least 8% in order to guarantee its ability to act during difficult market periods. Fourth, the VW AG wants to become the most attractive employer in the industry.

4. MAIN PROBLEMS & CHALLENGES THE VW AG IS FACING NOW

4.1 THE EMISSION ISSUE

In September, the Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to the VW AG. The notice of violation included irregularities in relation to nitrogen oxide emissions. Apparently, the VW AG intentionally installed a software in diesel engines that could detect when being tested and immediately change the performance during laboratory emissions testing. The software caused the vehicle's nitrogen oxide output to meet US standards during regulatory testing but in real-world driving the vehicles emitted up to 40 times more. This software was used in certain 2009 to 2015 model year vehicles. Four days after the notice the VW AG publicly confirmed the irregularities.

The VW AG reacted fast to clarify the irregularities with internal inquiries and external investigations. External lawyers in Germany and the USA, as well as a special internal committee that coordinates all activities related to the emissions problem, transparently supported the extensive investigations and clarifications of all related matters. Three months later, in December 2015, the VW AG announced the clarification of the emissions issue. However, they only fully acknowledged that they had manipulated the vehicle emission tests after being confronted with evidence. Performing extensive internal measurement checks and reviews, the effects of the integrated software were not that significant. Neutral technical services under the supervision of the authorities discovered discrepancies between the stated amount of nitrogen oxide emissions and the values found during testing only for a limited number of engine-transmission variants.

The irregularities in certain diesel engines lead to a high number of provisions, mainly for pending technical modifications, customer-related measures, legal risks, as well as repurchases, in 2015. In total, €16.2 billion were recognized and charged to the operating result. Almost the half (€7.0 billion) are provisions only for legal risks associated with the diesel issue. The VW AG must face several charges all over the world as criminal and administrative proceedings, product-related lawsuits, and lawsuits filed by investors. In case that all legal risks materialize, the VW AG must face considerable financial charges. In addition, many investors services as Moody's or Standard & Poor downgraded the VW AG's short and long-terms ratings and proposed a negative outlook. In response to the emission issue and resulting public speculations about possible consequences, the stock prices of the VW AG's ordinary and preferred shares suffered a sharp fall in value, almost a third in the days immediately after the news. Then, the share price recovered temporarily, presumably due to the clarification of the emission issue (see Figure 5).

Figure 5. Volkswagen AG's Return Development

As a consequence of the emission issue the VW AG announced a five-point plan to realign the group. First, the VW AG wants to work closely with the authorities to provide technical solutions for its customers associated with the emission irregularities. Second, the investigations must be completed independently and systematically to figure out how this could have happened. The goal is to ensure that such mistakes will never occur again. Then, the VW AG plans to introduce a new group structure. This implies that the management will be more decentralized to encourage responsible and entrepreneurial thinking. Moreover, the VW AG wants to align culture and management by putting emphasis on an open and honest communication and a constructive approach to deal with mistakes. Finally, the VW AG plans to stick with its introduced "Strategy 2018" plan including an increase in customers' satisfaction and employee's' motivation as well as excellent quality products and services. Despite its five-point plan, the VW AG is still struggling with reputation issues as an aftermath of the emission-cheating scandal in September 2015.

4.2 THE VOLKSWAGEN WEAKNESS

Besides ne emission scandal, the VW AG is also struggling with its brand Volkswagen. The main problems are not only the Brazilian and American sales markets, but also the high manufacturing costs. Brazil is one of the core markets for the Volkswagen. However, the economic circumstances in Brazil weakened the local automotive market in the last years. Increasing inflation as well as high interest rates lead to overpriced cars and impede high sales numbers. The VW AG expected that the decrease in sales will recover, but it did not. Amongst the bad economic circumstances, local car manufacturers in Brazil rise and reinforce competition. The VW AG estimates further decrease in sales in 2016. Nevertheless, it wants to strengthen its competitive situation in Brazil by offering locally produced cars which are developed solely for the Brazilian sales market.

Furthermore, the VW AG is struggling with its shares in the second most important market in the world, namely The United States. Currently, the VW AG holds around 1.9% of the US market, while its competitors Toyota (12.3%) and Hyundai (4.4%) hold a much stronger position. In the VW AG, Volkswagen is supposed to build mainstream and mass-market transportation with fair prices. However, due to the brand's inclusion of premium technology in lower-level models, Volkswagen has higher prices and transaction costs than its competitors. This fact is a benefit for customers, but also prevents the VW AG from competing on price with its less sophisticated competitors. Moreover, sport utility vehicles (SUV) are the most competitive vehicles in the US. As Volkswagen's SUV is not efficient in fuel consumption it only managed to gain 1.1% of the segment's sales in 2015.

Unfortunately, the VW AG does not only struggle with the sales markets, but also with internal processes its margins. Cars of the Volkswagen brand have high quality but they are facing earning problems. The high costs decrease the company's margins which is why the VW AG needs to compensate with brands such as Porsche and Audi.

NEWS

THE MOST IMPORTANT NEWS FROM AROUND THE WORLD

SINCE 1875

Volkswagen Group cuts 30.000 jobs

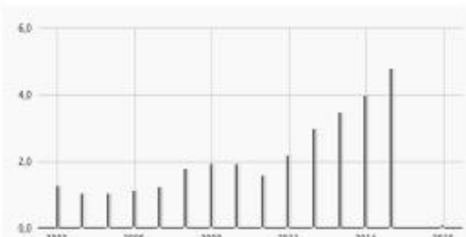
In order to properly rehabilitate after the emission scandal the Volkswagen Group plans to cut over 30.000 jobs until 2025. (T3News, 2016)

South Korea forbids the import of Porsche cars

Bad news for German car manufacturers - South Korea forbids the import and sale for several model of the Porsche brand. Reason for the prohibition are manipulations of certification documents regarding the emission values according to the South Korean authorities. (Spiegel Online, 2016)

Sharp decrease in dividend payments for investors

Several investors already speculated if the Volkswagen Group will cancel dividend payments before the announcement of its net losses in 2015. However, it turns out to be not that bad. Apparently, dividend payments will be decreased due to the emission scandal in 2016, but investors of preferred shares still get 0.17 Euro. The decline in dividend payment amounts 96 percentage compared to 2015.



(Handelsblatt, 2016)

Volkswagen: VW extends 20-billion-euro loan to weather diesel fall-out

To protect the financial framework for the group's operations and increase its financial flexibility, the automobile manufacturer Volkswagen AG extends a 20 billion-euro bank credit line until June 2017. The company's emission scandal reduced its market value by billions and made borrowing in the debt market much more expensive. (4-Traders, 2016)

Engineering at the highest level

Innovative technology makes tomorrow's mobility possible. Volkswagen is at the very forefront. With more than 9,780 highly qualified employees, the "Research and Development" division has become one of the automotive industry's largest development sites worldwide. (Volkswagen Karriere, 2016)

Volkswagen's big china challenge is sales, not emissions

The bad publicity, caused by the emission scandal, may be leading consumers to look at other brands. However, VW is still the market leader, with its Volkswagen, Audi and Skoda brands enjoying a combined 20 percent share. (Bloomberg, 2015)

Appendix I: Balance sheets from 2011 to 2015 (data in million euros)

in million EUR	Average sector with profits	Average sector Top 10	2015	%	2014	%	2013	%	2012	%	2011	%
Non-current assets	**42%**	**41%**	**158.260**	**41%**	**149.276**	**43%**	**137.756**	**42%**	**131.794**	**43%**	**85.786**	**34%**
Intangible assets	10%	6%	61.147	16%	59.935	17%	59.243	18%	59.112	19%	22.176	9%
Fixed assets	26%	27%	83.344	22%	73.753	21%	64.646	20%	59.458	19%	48.502	19%
Other fixed assets	6%	8%	13.769	4%	15.588	4%	13.867	4%	13.224	4%	15.108	6%
Current Assets	**58%**	**59%**	**223.675**	**59%**	**201.934**	**57%**	**186.577**	**58%**	**177.724**	**57%**	**167.983**	**66%**
Inventory	9%	9%	35.048	9%	31.466	9%	28.653	9%	28.674	9%	27.551	11%
Accounts receivable	5%	5%	11.132	3%	11.472	3%	11.133	3%	10.099	3%	10.477	4%
Other current assets	44%	46%	177.495	46%	158.996	45%	146.791	45%	138.951	45%	129.955	51%
Cash and cash equivalents	6%	7%	20.871	5%	19.124	5%	23.178	7%	18.488	6%	18.291	7%
Total Assets	**100%**	**100%**	**381.935**	**100%**	**351.210**	**100%**	**324.333**	**100%**	**309.518**	**100%**	**253.769**	**100%**

Net Equity	**25%**	**26%**	**88.270**	**23%**	**90.189**	**26%**	**90.037**	**28%**	**81.995**	**26%**	**63.354**	**25%**
Capital	2%	2%	1.283	0%	1.218	0%	1.191	0%	1.191	0%	1.191	0%
Other shareholders funds	23%	24%	86.987	23%	88.971	25%	88.846	27%	80.804	26%	62.163	24%
Non-current Liabilities	**38%**	**37%**	**172.595**	**45%**	**150.435**	**43%**	**137.119**	**42%**	**140.659**	**45%**	**108.917**	**43%**
Long term loans	21%	23%	84.098	22%	76.608	22%	68.349	21%	70.676	23%	51.382	20%
Long term provisions	17%	14%	88.497	23%	73.827	21%	68.770	21%	69.983	23%	57.535	23%
Current Liabilities	**37%**	**38%**	**121.070**	**32%**	**110.586**	**31%**	**97.177**	**30%**	**86.864**	**28%**	**81.498**	**32%**
Short term loans	10%	9%	46.337	12%	40.748	12%	37.231	11%	31.698	10%	27.123	11%
Account payable & other short term operating debts	9%	9%	20.460	5%	19.530	6%	18.024	6%	17.268	6%	16.325	6%
Other current liabilitites	18%	19%	54.273	14%	50.308	14%	41.922	13%	37.898	12%	38.050	15%
Total Equity and Liabilities	**100%**	**100%**	**381.935**	**100%**	**351.210**	**100%**	**324.333**	**100%**	**309.518**	**100%**	**253.769**	**100%**

Appendix II: Income statement from 2011 to 2015 (data in million euros)

in million EUR	Average sector with	Average sector Top 10	2015	%	2014	%	2013	%	2012	%	2011	%
Turnover	**100%**	**100%**	**226.197**	**100%**	**212.756**	**100%**	**206.964**	**100%**	**203.160**	**100%**	**169.064**	**100%**
Sales	**90%**	**89%**	**213.292**	**94%**	**202.458**	**95%**	**197.007**	**95%**	**192.676**	**95%**	**159.337**	**94%**
Cost of materials	54%	54%	179.382	79%	165.934	78%	161.407	78%	157.522	78%	131.371	78%
Gross margin	**14%**	**15%**	**46.815**	**21%**	**46.822**	**22%**	**45.557**	**22%**	**45.638**	**22%**	**37.693**	**22%**
Other operating expenses	14%	14%	50.883	22%	34.125	16%	33.885	16%	34.139	17%	26.422	16%
OPERATING RESULT (EBIT)	**3%**	**6%**	**- 4.068**	**-2%**	**12.697**	**6%**	**11.672**	**6%**	**11.499**	**6%**	**11.271**	**7%**
Financial income	1%	0%	5.178	2%	4.767	2%	3.128	2%	16.551	8%	9.707	6%
Financial expenses	1%	1%	2.411	1%	2.670	1%	2.371	1%	2.562	1%	2.052	1%
FINANCIAL RESULT	0%	0%	2.767	1%	2.097	1%	757	0%	13.989	7%	7.655	5%
Earnings before taxes	**4%**	**6%**	**- 1.301**	**-1%**	**14.794**	**7%**	**12.429**	**6%**	**25.488**	**13%**	**18.926**	**11%**
Income Tax	1%	2%	59	0%	3.726	2%	3.284	2%	3.607	2%	3.126	2%
NET INCOME	**2%**	**4%**	**- 1.360**	**-1%**	**11.068**	**5%**	**9.145**	**4%**	**21.881**	**11%**	**15.800**	**9%**

Appendix III: Cash Flow Statement

in million EUR	2011	2012	2013	2014	2015
Cash Flows From Operating Activities					
Depreciation & amortization	10333	13114	14650	16791	19656
Deferred income taxes	0	0	-3107	-4040	-3238
Inventory	-4234	460	-1021	-2214	-3149
Other working capital	-6105	-13247	-10609	-13401	858
Other non-cash items	8506	6882	12682	13648	-448
Net cash provided by operating activities	8500	7209	12595	10784	13679
Cash Flows From Investing Activities					
Investments in property, plant, and equipment	-9753	-10493	-11385	-16613	-18234
Acquisitions, net	-5833	-4106	-151	-241	-179
Purchases of investments	-1276		-810	-2154	-4733
Sales/Maturities of investments	21				3173
Purchases of intangibles	-8087	-10493	-11385	-12012	-13213
Sales of intangibles	140	373	622	403	533
Other investing activities	6157	5237	6219	11518	11502
Net cash used for investing activities	-18631	-19482	-16890	-19099	-21151
Cash Flows From Financing Activities					
Debt issued	16734	26055	22118	25608	22533
Debt repayment	-11603	-16952	-14614	-21748	-23755
Common stock issued	3	2046	3067	4932	2457
Dividend paid	-1266	-1673	-1849	-1962	-2516
Other financing activities	4448	4236	251	-2185	10349
Net cash provided by (used for) financing activities	8316	13712	8973	4645	9068
Effect of exchange rate changes	82	-141	-462	294	232
Net change in cash	-1733	1298	4216	-3376	1828
Cash at beginning of period	18228	16495	17794	22009	18634
Cash at end of period	16495	17793	22010	18633	20462
Free Cash Flow					
Operating cash flow	8500	7209	12595	10784	13679
Capital expenditure	-9753	-10493	-11385	-16613	-18234
Free cash flow	-1253	-3284	1210	-5829	-4555

Appendix IV: Ratios from 2011 to 2015

	Average sector with profits	Average sector Top 10	2015	2014	2013	2012	2011
DEBT AND CAPITALIZATION							
Debt = Liability / Assets	0,74	0,74	0,77	0,74	0,72	0,74	0,75
Debt Quality = Current Liabilities / Total Liabilities	0,49	0,51	0,41	0,42	0,41	0,38	0,43
Repayment Capacity = Cash flow /Loans	0,18	0,22	0,09	0,19	0,19	0,31	0,30
Cost of debt = Financial Expenses / Loans	0,03	0,02	0,02	0,02	0,02	0,03	0,03
Financial Expenses = Financial Expenses / Sales	0,01	0,01	0,01	0,01	0,01	0,01	0,01
LIQUIDITY							
Liquidity = Current Assets / Current Liabilities	1,59	1,58	1,85	1,83	1,92	2,05	2,06
Treasury = Debtors + Cash / Current Liabilities	0,32	0,31	0,26	0,28	0,35	0,33	0,35
Acid Test = Cash / Current Liabilities	0,15	0,17	0,17	0,17	0,24	0,21	0,22
Z (UPF) = -3,9 + 1,28 CA/CL+ 6,1 E/A+ 6,5 NI/A+ 4,8 NI/E	0,17	0,49	-0,22	0,80	0,92	2,08	1,86
Working Capital (real) (euros)= Current assets – Current liabilities	222.476	118.070	102.605	91.348	89.400	90.860	86.485
Operating Working Capital (euros)= Operating current assets – Operating current liabilities	19.042	11.472	254	1.784	7.709	8.295	12.871

ASSETS MANAGEMENT							
Non-current assets turnover = Sales / Non-current assets	1,89	2,00	1,35	1,36	1,43	1,46	1,86
Current assets turnover = Sales / Current aassets	1,34	1,36	0,95	1,00	1,06	1,08	0,95
DEADLINES							
Inventories days = Stocks / Daily cost of sales	70,34	67,30	59,98	56,73	53,09	54,32	63,11
Days receivable (days) = Clients / Daily Sales	24,25	22,26	19,05	20,68	20,63	19,13	24,00
Days payables (days) = Suppliers / Daily cost of sales	70,78	69,21	41,63	42,96	40,76	40,01	45,36
SALES							
Sales growth = Last year's sales / Previous year sales	6%	12%	5%	3%	2%	21%	

PROFITABILITY, SELF-FINANCING AND GROWTH							
Return on assets = EBIT / Assets	3%	5%	-1%	4%	4%	4%	4%
Return on equity = Net Income / Equity	7%	12%	-2%	12%	10%	27%	25%
Cash flow / Sales	7%	9%	5%	11%	10%	16%	15%
Cash flow / Assets	6%	7%	3%	6%	6%	10%	9%
Dividends / Net profit	n.a.	n.a.	-0,185%	0,018%	0,020%	0,008%	n.a.
Dividends / Net equity	n.a.	n.a.	0,003%	0,002%	0,002%	0,002%	n.a.

Appendix V: Breakdown of profitability

	ROE =	EBIT/Sales	Sales /Assets	(Assets/Equity) x (EBT/EBIT)	Net Profit/EBT
Average sector	7%	0,04	0,78	4,09	0,61
Average sector with profits	10%	0,07	0,81	3,00	0,61
2015	-2%	-0,02	0,56	1,38	1,05
2014	12%	0,06	0,58	4,54	0,75
2013	10%	0,06	0,61	3,84	0,74
2012	27%	0,06	0,62	8,37	0,86
2011	25%	0,07	0,63	6,73	0,83

CASE STUDY

Please answer the following questions by only using the information provided in this case.

1. Identify the main qualitative strengths and weaknesses.
2. Identify the main financial strengths and weaknesses.
3. Imagine being an investor, would you invest?
   - Before the emission scandal
   - After the emission scandal
4. State recommendations for the Volkswagen AG.
5. Provide a quantitative demonstration of your recommendations (Budgeting).