



ABSTRACT

A business excellence assessment of 8 leading automotive companies using publicly available data.

ASSESSING THE AUTOMOTIVE SECTOR

Assessing the Automotive Sector

About BEX

At the Business Excellence Institute, we're passionate about excellence. We work to help people and organisations achieve it, offering a broad range of services that translate our passion into results.

Our mission is to achieve outstanding results for all our stakeholders by inspiring and helping organisations on their journey to excellence, leveraging the knowledge, skill, innovation and team work of our people and the Business Excellence Institute's community to add real value to their businesses.

For more information, visit businessexcellence.org.

Assessing the Automotive Sector

Executive Summary

In this study we set out to determine whether it was possible to assess an organisation against a business excellence model using publicly available data. The sector chosen for this pilot was the automotive sector.

There are a number of “standard KPIs” used to report the performance, normally reported in the Sustainability and / or Annual Reports. In addition, JD Power produce a number of regular customer focused reports which are standard across the industry. This makes comparisons possible.

To complete the assessments in a consistent and fair manner, we selected the most commonly used indicators and mapped them across the BEX Sustainable Business Excellence Framework. We not only looked at the current figures but also at trends over a 3 year period (2012 to 2014).

In the paper, we explain how this approach has been used to assess 8 companies within the automotive sector:

- ◆ BMW
- ◆ FIAT
- ◆ Ford
- ◆ Mercedes-Benz
- ◆ Porsche
- ◆ Toyota
- ◆ Volvo
- ◆ Volkswagen

Introduction

As Business Excellence Professionals, we all know one of the key advantages of a business excellence framework is the ability to conduct a holistic assessment of a global organisation. So why do so few organisations use business excellence models in this way? It's far more common to find models being used to assess a business unit or a single location. Many are put off by the perceived complexity of conducting such an extensive assessment. In other organisations, the leadership do not see the benefit of using a model in this way, preferring other methods of identifying current strengths and improvement potentials.

Over the years, there have been numerous discussions amongst excellence assessors about various different organisations they would like to assess or see entering one of the excellence awards around the world. Similar discussions take place within the “sustainability community” on the topic of sustainability reporting. Whilst there are a number of guidelines commonly used to structure reports, the choice of how indicators are calculated or how much data is presented is not standardised. This makes it difficult to compare data; to determine how good the performance reported actually is. Those with a foot in both

Assessing the Automotive Sector

these camps have discussed whether it would be possible to conduct an assessment of an organisation using their existing sustainability report as the input, rather than a dedicated “submission document”.

In this project, we set out to conduct “desk assessments” of a number of well-known companies in the automotive sector to address the points raised above; is it possible to use a sustainability report to assess an organisation? And, if it is, can we then assess the level of excellence of any organisation, based on publicly available data?

Why the Automotive Sector?

One of the key result criteria in any excellence model relates to customers; both the internal performance and the customer perception. The automotive sector, specifically the car manufacturers, are one of a handful where independent customer results are regularly published; chiefly the JD Power surveys. These are conducted annually and are accepted as "the standard" within the industry.

In addition, most people are aware of the major brands and will have their own opinion regarding "how excellent" they are. The brands selected for inclusion were:

- ◆ BMW
- ◆ FIAT
- ◆ Ford
- ◆ Mercedes-Benz
- ◆ Porsche
- ◆ Toyota
- ◆ Volvo
- ◆ Volkswagen (VW)

Methodology

As this study is a "desk review", using Sustainability Reports as the main input, we are focusing on the results achieved.

The Model

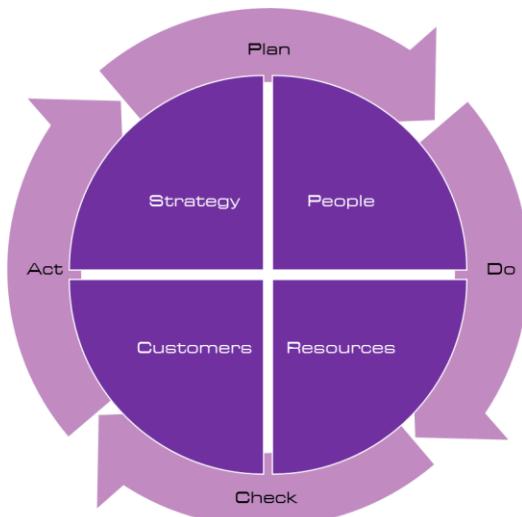
We have used the BEX Sustainable Business Excellence Framework for this study. It has 4 dimensions, each of which considers both the "enablers" (the actions the organisation takes) and the "results" (what they achieved). They are:

Strategy: the key outcomes used to monitor progress against the strategic objectives, including key financials.

People: perceptions and performance indicators used to understand the employee experience.

Resources: perceptions and performance indicators used to monitor how efficiently and effectively the organisation uses the resources available to them.

Customers: perceptions and performance indicators used to understand the customer experience.



Assessing the Automotive Sector

NOTE

At the time of publishing, there is an ongoing legal investigation of Volkswagen's use of software in diesel vehicles to recognise when they are being emissions tested and alter their performance. This has already led to the resignation of the CEO and the costs of fines and potential product recalls is expected to be several billion Euro. It is still not clear whether Volkswagen is the only manufacturer involved.

For the purposes of the assessments in this study, we have assumed that all publicly available data is robust and reliable.

Assessing Performance

A rating for each of the dimensions has been determined based on:

Scope: the amount of relevant data publicly available, relating to the criteria

Trends: how the performance of the set of indicators and perceptions used has changed over time

Comparisons: how performance reported compares to others within the study

Each dimension is rated out of 100%, where 100% would mean that there is conclusive information available to state that, beyond any reasonable doubt, the organisation concerned is “perfect”. At the other extreme, a rating of 0% would mean there is conclusive information available that the organisation is as far from perfect as it is conceivably possible to be. If not worse.

If we consider the “organisational excellence rating” as a “normal distribution curve”; an “average organisation” will therefore score around 50%. While it’s possible to score at either of the extremes, the chances of this happening are very unlikely. However, to score above average, it must be clear from the available data & information that they are doing something better than their peers.

Each of the 4 criteria have the same weighting in the scoring system, which makes the calculation of the final score from the criterion scores simple and transparent. Based on the average rating for each dimension, each company will be placed within a 50 point banding on a 1000 point scale (1000 points being the theoretical maximum available).

Assessing the Automotive Sector

Indicators

We have selected between 3 and 6 indicators for each of the 4 result areas based on relevance, both to the sector and the Framework, comparability and availability. A number of the companies in the study use the Global Reporting Initiative (GRI) guidelines to structure their sustainability report. We have indicated where the indicators chosen link to GRI:

Dimension	Indicator	Comments
Strategic Outcomes	Revenue	Total revenue generated (GRI Indicator EC1)
	Profit	Net profit, after tax (GRI Indicator EC1)
	Return on Equity	Calculated as Net Profit / Shareholder Equity
	R&D Investment	Amount invested in research and development, as a % of total revenue
	Unit Sales	Total unit sales, as reported by the manufacturer
	Market Share	Market Share, as reported independently by Bloomberg
People	Employee Satisfaction	% satisfied employees, as reported by the company
	Headcount	Number of permanent employees, as reported by the company
	Apprentices / Trainees	Number of people involved in apprentice or trainee programs, as a percentage of the total population
	Female Staff & Managers	Number of female workers and managers, as a percentage of the total population
	Accident Rate	Calculated as incidents that result in absence per million hours worked (GRI Indicator LA17)
Resources	Water Consumption	Total water consumption per vehicle produced (GRI Indicator EN8)
	Energy Consumption	Total energy consumption per vehicle produced (GRI Indicator EN3)
	CO ₂ emissions	Total CO ₂ emissions per vehicle produced (GRI Indicator EN16)
	% Reduction in CO ₂ emissions	As above but expressed as a % reduction over the 3 year reporting period (2012 to 2014)
	Waste	Total waste generated per vehicle produced (GRI Indicator EN22)
	CO ₂ emissions from fleet	Average CO ₂ emissions for the vehicle fleet, calculated as g/km
Customers	Initial Quality Study (US Market, Problems per 100 vehicles)	Independent survey conducted by JD Power for the automotive industry; abbreviated to IQS
	Vehicle Ownership Satisfaction Survey (UK & German markets)	Independent survey conducted by JD Power for the automotive industry; abbreviated to VOSS

Assessment Results

Once the metrics had been selected, the relevant data was collated from publicly available reports for a 3 year period (2012 to 2014, wherever possible). In some cases, the results are directly comparable as they come from the same source, such as the JD Power survey results. In other cases, direct comparison was not possible for whatever reason, the performance change over the 3 year period was calculated. Assuming the internal measurement is consistent, this rate of change should be comparable.

The table below summarises the results used in the assessment of each company in the study:

	BMW	Fiat	Ford	Mercer es-Benz	Porsche	Toyota	Volvo	VW
% Growth of Revenue	4.6%	14.7%	1.6%	13.6%	24.1%	23.4%	4.3%	5.1%
3 Year Average Net Profit	7.0%	1.3%	3.8%	6.3%	13.4%	6.5%	0.3%	7.0%
3 Year Average Return on Equity (ROE)	15.7%	n/a	n/a	n/a	23.5%	12.0%	n/a	11.2%
3 Year Average R&D Investment	5.7%	2.5%	4.4%	2.0%	n/a	3.6%	4.9%	4.9%
Global Market Share	4.2%	5.9%	7.6%	5.1%	<4%	11.6%	<4%	11.1%
3 Year Growth of Unit Sales	14.8%	9.1%	11.6%	18.7%	29.7%	24.0%	10.4%	9.3%
3 Year Growth in Headcount	9.9%	6.3%	9.4%	2%	29.2%	-11.8%	14.8%	7.8%
% Female Managers	11.4%	13.1%	17.7%	15.0%	n/a	2.6%	24.5%	10.2%
Accident Rate	5.8	1.5	n/a	8.8	n/a	n/a	1.7	3.6
Water Consumption	2.2	3.2	4.0	n/a	1.7	3.0	1.4	4.2
CO₂ emissions (kg per vehicle)	660	490	760	963	600	750	n/a	842
% Reduction in CO₂ per vehicle	-8.3%	-4.5%	-11.6%	-9.1%	-1.6%	-8.4%	-26.7%	-5.9%
% Change in Waste	-23.8%	-1.7%	-30.9%	n/a	4.6%	3.3%	-7.3%	-11.8%
Energy Consumption	2.25	n/a	2.47	n/a	2.37	n/a	n/a	2.05
CO₂ from new cars (g/km)	130	122	122	129	n/a	n/a	125	126
Initial Quality Survey (PP100)	107	174	118	111	78	104	116	124
VOSS Ranking (UK)	13	24	16	3	n/a	8	7	5
VOSS Ranking (Germany)	9	25	17	4	1	2	2	7

Assessing the Automotive Sector

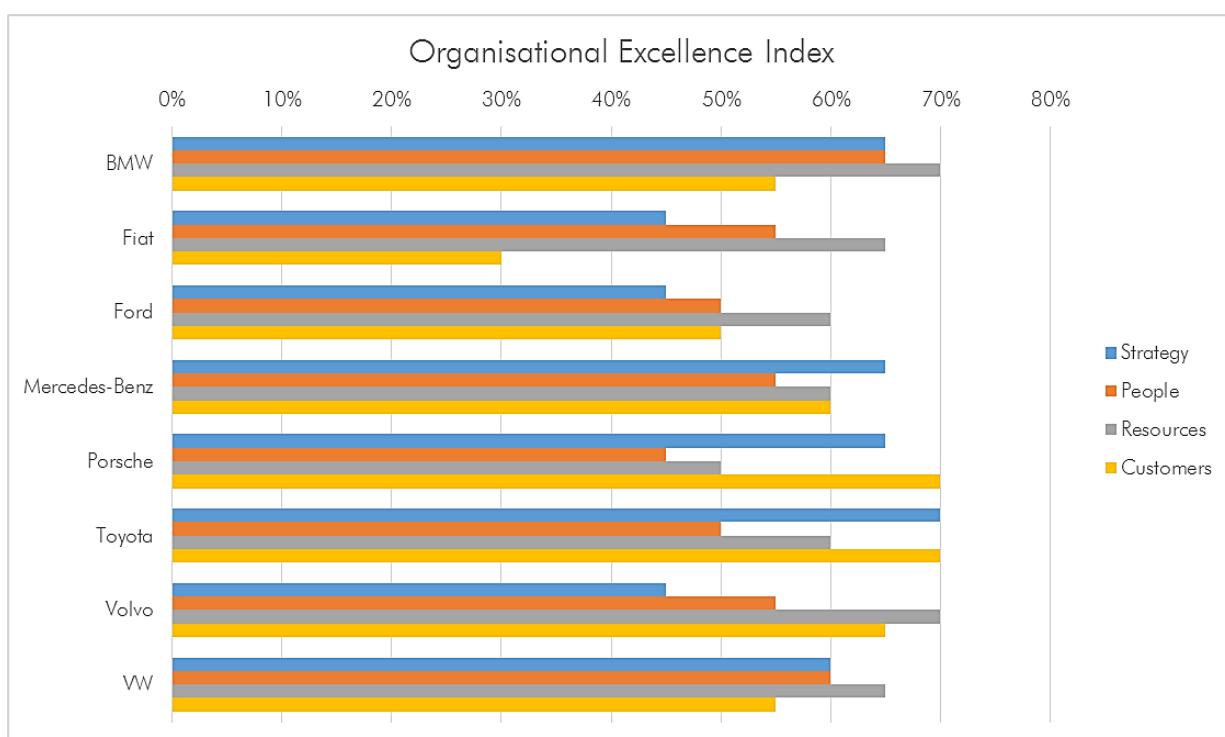
Organisational Excellence Index

The table below summarises the Organisational Excellence Index calculated for each company assessed in this study, in 50 point bands:

	Organisational Excellence Index																		
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	
BMW																			
Fiat																			
Ford																			
Mercedes																			
Porsche																			
Toyota																			
Volvo																			
VW																			

This will make sense to many; the reputations of BMW and Toyota, the highest ranking companies in the study would, lead many to a similar conclusion. However, as the table below indicates, each of these 2 companies has different strengths:

- ◆ **BMW** have shown steady growth over the 3 year period in the study; it's one of the most consistent performers in the study. It has made significant improvements in its environmental performance, recognised through the Dow Jones Sustainability Index in 2014. However, its performance in the JD Power Initial Quality Study (IQS) and other customer surveys is not where many would expect from this premium brand.
- ◆ Based on a reputation for quality and reliability, **Toyota** has steadily built its market share to achieve the #1 position in the market. However, increasing competition from a number of other OEMs, specifically from Korea, are increasing the pressure.



There are four companies in the next scoring band:

- ◆ **Mercedes-Benz** has strong performance in its strategic outcomes although in a number of areas it is trailing the other companies in the study, including the average CO₂ emissions from its fleet and their accident rate.
- ◆ While limited data is available on **Porsche**, where comparisons can be made, including key financial results, customer perception and some environmental indicators, they appear to be performing significantly better than others in the study.
- ◆ In terms of the strategic outcomes, **Volvo** is not performing as well as other OEMs in the study. However, customer perception and loyalty has always been strong and, with new owners investing heavily in both design and the infrastructure, things could be set to improve.
- ◆ **Volkswagen** has a multi-brand strategy that had allowed it to achieve the #1 market share slot until 2014. However, it has recently become involved in a major scandal regarding emissions testing. The full impact of the ongoing investigations is not clear yet; the financial penalties will be considerable but the impact in other areas, including customer perception and the Dow Jones Sustainability Index, where VW has always been highly rated, is harder to predict.

The final two companies in the study were Fiat & Ford:

- ◆ **Fiat** has one of the lowest rates of growth in revenue and generates one of the lowest profit margins in the study. They are consistently in the lowest rated quartile in both the Initial Quality Study and the Vehicle Ownership Satisfaction Survey. They do, however, have the lowest accident rate reported in the study.
- ◆ **Ford** has shown significant improvements in a number of areas, including customer perception. However, they were the only company in the study to report a reduction in sales in 2014. Along with Fiat, the new cars they sell have the lowest CO₂ emissions in the study.

Assessing the Automotive Sector

Appendix 1 – Assessment Summary by Company

BMW

Strategic Outcomes

- ◆ BMW has achieved significant growth since 2012, with revenue increasing by 5% and net profit by 14%. In terms of finances, it is amongst the most consistent performers in the study.
- ◆ The Return on Equity (ROE) is consistently within the 15% to 20% range. The Return on Capital Employed (ROCE) has reduced from 32% in 2012 to 20% in 2014.
- ◆ BMW is ranked as the 9th largest OEM in the global market by Bloomberg (2014), in terms of unit sales.

People

- ◆ BMW run its Associate Survey every 2 years but no trend data is published in their Sustainability Report.
- ◆ Although around 18% of the workforce is female, less than 12% of managers are women.
- ◆ There has been a 40% reduction in the accident rate compared to 2010. However, there are others within the sector reporting significantly lower accident rates.

Resources

- ◆ BMW was the highest rating automotive company in the Dow Jones Sustainability Index 2014.
- ◆ BMW has made significant reductions in the environmental impact of their operations, including reducing waste, energy and water consumption and CO₂ emissions per vehicle produced.
- ◆ There has been a significant reduction in solvent & VOC emissions due to investment in Chinese paint shop in 2013.
- ◆ CO₂ emissions from new vehicles sold have reduced by 12% since 2012, although, at 130g per km, the average emissions from the BMW fleet are still amongst the highest in the study.

Customers

- ◆ BMW has improved in the Initial Quality Study ranking, going from 113 problems per 100 cars in 2010 to 99 in 2015. As a result, it has climbed the rankings from 16th to 6th place in this period.
- ◆ BMW was ranked 13th in the 2014 UK Vehicle Ownership Satisfaction Survey and moved up 2 positions to 9th place in the 2014 German survey.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
65%	60%	70%	55%	601 to 650

FIAT

The last available report for FIAT is the first produced for the new FIAT Chrysler Automobiles company. It is a comprehensive, 347 page report and provides some data segmented by brand.

Strategic Outcomes

- ◆ Revenues have increased by 15% since 2012, although the average profit for the last 3 years has been 1.3% of revenue generated. This is one of the lowest in the study.
- ◆ The Return on Equity (ROE) fell from 15.5% in 2013 to 4.6% in 2014.
- ◆ The increase in the volume of units sold (9% between 2012 and 2014) is the lowest in the study.
- ◆ In 2014, Fiat was ranked as the 6th largest global car manufacturer by Bloomberg (2014).

People

- ◆ Headcount has increased significantly due to mergers & acquisitions, most notably the formation of Fiat Chrysler Automotive (FCA) in 2014.
- ◆ Although 20% of the workforce are female, only 13% of managers are female.
- ◆ Accidents have decreased by over 30% between 2012 and 2014. In this respect, Fiat are one of the best performing in the sector.
- ◆ Training spend reduced in 2014 compared to previous years as Fiat sought to increase "on the job" training.
- ◆ There is currently no global approach to measuring employee perceptions within Fiat.

Resources

- ◆ Fiat has made significant reductions in the environmental impact of its operations, including reducing waste, energy and water consumption and CO₂ emissions per vehicle produced. However, the rate of improvement made between 2012 and 2014 is lower than most of the other OEMs in this study.
- ◆ The average CO₂ emissions from the Fiat fleet are amongst the lowest in the sample.

Customers

- ◆ Fiat is the worst performer in the Initial Quality Study included in the study. In 2015, they were the worst rated brand with 161 problems per 100 vehicles.
- ◆ Fiat is one of the lowest rated brands in the Vehicle Ownership Satisfaction Survey in both the UK and German markets.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
45%	55%	65%	30%	451 to 500

Assessing the Automotive Sector

Ford

The 2014 sustainability report shows a number of changes compared to the 2013 report; several of the indicators are presented in a different format or no longer included. Where this was the case, we have looked at trends from 2011 to 2013, rather than 2012 to 2014.

Strategic Outcomes

- ◆ Revenues have increased by 6% between 2011 and 2014, although pre-tax profits dropped from \$8.6 billion in 2013 to \$6.3 billion in 2014 and Net Income dropped from \$7.2 billion to \$3.2 billion over the same period following a drop in unit sales.
- ◆ Return on Equity (ROE) fell from 27% in 2013 to 13% in 2014.
- ◆ Ford is currently ranked as the 4th largest OEM in the global market by Bloomberg (2014), in terms of unit sales.

People

- ◆ There has been a significant increase in employee satisfaction over the past 3 years.
- ◆ Compared to others in the automotive industry, Ford has a high percentage of female employees & managers.
- ◆ Ford is consistently below the US Automotive Sector industry average accident rate.

Resources

- ◆ All the key environmental impact indicators included in the study show reductions between 2012 and 2014. For example, waste for disposal has reduced by 30% over the 3 year period reported, the highest reduction in the study.
- ◆ At 122g per km, the average CO₂ emissions from the Ford fleet are amongst the lowest in the study.

Customers

- ◆ Ford has improved significantly in the JD Power Initial Quality Study rankings, climbing from a low of 27th in 2012 to 12th in 2015.
- ◆ In the 2014 Vehicle Ownership Satisfaction Surveys, Ford was ranked 16th in the UK and 17th in the German market.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
45%	55%	65%	55%	501 to 550

Mercedes-Benz

The Daimler Group Sustainability Report is comprehensive and provides segmented data for brands in many areas.

Strategic Outcomes

- ◆ The key financial results for the Daimler Group show significant growth between 2012 and 2014, with revenue increasing by 14% and net profit by 7%.
- ◆ Return on Equity (ROE) fell from 20.1% in 2013 to 16.4% in 2014; Return on Capital Employed (ROCE) fell from 8.2% to 7.4% over the same period.
- ◆ Unit sales for Mercedes-Benz cars increased by 19% between 2012 and 2014; amongst the highest growth rates in the study.
- ◆ Daimler Group is ranked as the 8th largest OEM in the global market by Bloomberg (2014), in terms of unit sales.

People

- ◆ Some information on the Employee Survey is included in the Daimler Group Sustainability Report but no trend data is presented.
- ◆ The percentage of female managers has increased from 13.8% in 2012 to 15% in 2014.
- ◆ Although the accident rate has reduced by 3% since 2012, Mercedes have the highest number of incidents in the study.

Resources

- ◆ CO₂ emissions from the fleet have reduced by 8% since 2012, although the average emissions from new cars sold are still amongst the highest in the study.
- ◆ VOC emissions per vehicle produced have increased by 14% between 2012 and 2014. Mercedes-Benz are the only company in the sample to report an increase.

Customers

- ◆ Mercedes have fallen from 87 problems per 100 cars in the Initial Quality Study in 2010 to 111 in 2015. As a result they have fallen in the ranking from 3rd to 15th.
- ◆ Despite the low IQS ranking, Mercedes is consistently one of the top rated brands in the Vehicle Owner Satisfaction Surveys in both UK and Germany.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
70%	65%	60%	60%	551 to 600

Assessing the Automotive Sector

Porsche

Porsche produced its first sustainability report in 2014, with data relating to the period 2011 to 2013. The contents are not as comprehensive as many of the other OEMs in this study but a significant amount of data is comparable, therefore included in this study.

Strategic Outcomes

- ◆ Significant financial growth from 2012 to 2014, with revenue and profit both increasing by more than 20%. The percentage profit reported by Porsche is significantly higher than the others in the sample.
- ◆ The Return on Equity (ROE) was 22.9% in 2014 and is consistently above the 15% to 20% range.
- ◆ Porsche increased vehicle sales by over 30% between 2012 and 2014.

People

- ◆ No trend data is publicly available regarding the employee perception within Porsche.
- ◆ Headcount has increased by nearly 30% over the 3 year period reported.
- ◆ Accidents have reduced by 11% over the 3 year period reported.

Resources

- ◆ Limited data is available in the Porsche Sustainability Report. In a number of cases, what is available is not immediately comparable with others in the industry. However, where comparisons can be made, such as energy consumption, water consumption and waste generated, Porsche appears to perform better than many others in the study.

Customers

- ◆ Porsche have topped the ranking in the JD Power Initial Quality Study for the last 3 years (2013 to 2015).
- ◆ Porsche was included in the German Vehicle Ownership Satisfaction Survey for the first time in 2014 and went straight in to the #1 position.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
65%	45%	50%	70%	551 to 600

Toyota

Strategic Outcomes

- ◆ According to the last figures issued by Bloomberg (2014), Toyota is now the leading automotive producer globally in terms of unit sales.
- ◆ Profits increased from around 280 billion yen in FY2011 to over ¥2,100 billion in FY2014.
- ◆ The Return on Equity has increased from 2.7% in FY2011 to 13.9% in FY2014. The 3 year average ROCE is 24.4%.
- ◆ Unit sales increased by 24% between FY2011 and FY2013, although the decrease in total sales reported in FY2014 gives them the lowest 3 year growth rate in the study.

People

- ◆ The range of People Indicators included in the Toyota Sustainability Report is less comprehensive than most others in the study.
- ◆ Employee perceptions show positive trends over the 3 year reporting period.
- ◆ While the percentage of female managers at Toyota increased significantly in 2014, it is still the lowest reported in the study.

Resources

- ◆ In terms of performance, the key environmental indicators available show significant improvement, in line with long term targets with the exception of waste per vehicle produced. This has increased for 2 consecutive years, from 12.1kg in 2012 to 12.5kg in 2014.
- ◆ The environmental indicators included in Toyota's Sustainability Report are often presented in a way that makes comparisons with others in the study difficult e.g. Average CO₂ Emissions from Fleet.

Customers

- ◆ Toyota perform consistently well in the JD Power Initial Quality Study and have been in the Top 10 for the last 5 years. However, in recent years a number of brands have improved significantly, putting pressure on Toyota to further improve to maintain this position.
- ◆ Toyota is currently ranked 2nd in the German and 8th in the UK Vehicle Ownership Satisfaction Surveys.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
75%	50%	60%	75%	601 to 650

Assessing the Automotive Sector

Volvo

Strategic Outcomes

- ◆ Despite making a significant loss in 2012, Volvo Cars has returned a profit in both 2013 and 2014.
- ◆ Volvo's percentage profit is less than 1%; significantly less than the other OEMs in this study.
- ◆ The Return on Equity (ROE) was 2.6% in 2014; the Return on Capital Employed (ROCE) was 35%.
- ◆ Comparing 2010 to 2014, there has been a 10% increase in unit sales. Despite this, revenues have only grown by 4%.

People

- ◆ Volvo is a sector-leader in terms of female management.
- ◆ They also have exceptionally low accident rates compared to others in the sector.
- ◆ Volvo do not include figures regarding employee perceptions in their public reporting.

Resources

- ◆ All the key environmental impact indicators included in the study show significant reductions between 2012 and 2014; in terms of CO₂ emissions per vehicle produced, Volvo show the greatest percentage reduction in the study.
- ◆ The average CO₂ emissions from the Volvo fleet are amongst the lowest in the sample.

Customers

- ◆ Volvo consistently has more than 100 problems per 100 cars reported in the JD Power Initial Quality Study. As a result, they are currently rated 19th amongst automotive suppliers.
- ◆ Despite the low IQS ranking, Volvo is consistently one of the top rated brands in the JD Power Vehicle Owner Satisfaction Surveys in both UK and Germany.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
45%	55%	70%	65%	551 to 600

Volkswagen

Strategic Outcomes

- ◆ Revenues have increased by 60% between 2010 and 2014.
- ◆ Profits have reduced from a high of €22 billion in 2012 to €10 billion in 2014.
- ◆ Volkswagen is currently ranked as the 2nd largest OEM in the global market by Bloomberg (2014), although the rate of increase in terms of units sold is considerably lower than other OEMs in the study.
- ◆ In September 2015, Volkswagen became embroiled in a scandal relating to the emissions tests of diesel vehicles in the US and European markets. How this impacts future results remains to be seen but the predicted costs are currently estimated at around €30 billion.

People

- ◆ Trends for employee perceptions show sustained high levels of satisfaction and motivation.
- ◆ The accident rate increased from 2.9 to 3.6 incidents per million hours worked between 2013 and 2014.
- ◆ Although nearly 16% of the workforce is female, only 10% of managers are women.

Resources

- ◆ Volkswagen was the highest rating automotive company in the Dow Jones Sustainability Index 2013, although they came 2nd in 2014 behind BMW. How the current scandal relating to emissions tests impacts their Dow Jones ranking remains to be seen.
- ◆ All the key environmental impact indicators included in the study show improvements between 2012 and 2014.
- ◆ Volkswagen have the lowest energy consumption per vehicle produced in the study.

Customers

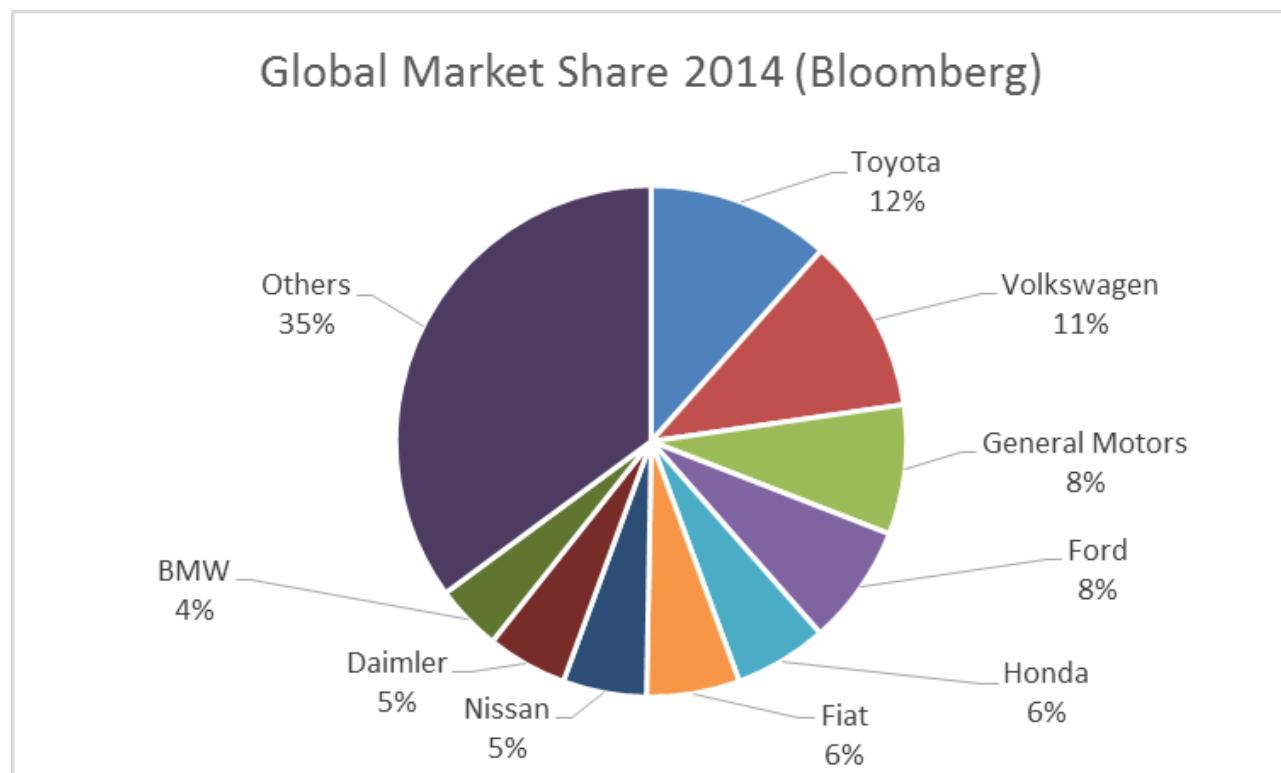
- ◆ Volkswagen consistently exceeds 120 problems per 100 cars, as reported in the JD Power Initial Quality Study. As a result, it is currently ranked 24th; amongst the lowest in the study.
- ◆ Despite the low ranking in the IQS study, Volkswagen's ranking in the Vehicle Owner Satisfaction Surveys (UK and German markets) sees them consistently in the Top 10.

Excellence Rating

Strategy	People	Resources	Customers	Excellence Rating
60%	60%	65%	55%	551 to 600

Appendix 2 - Summary of Data

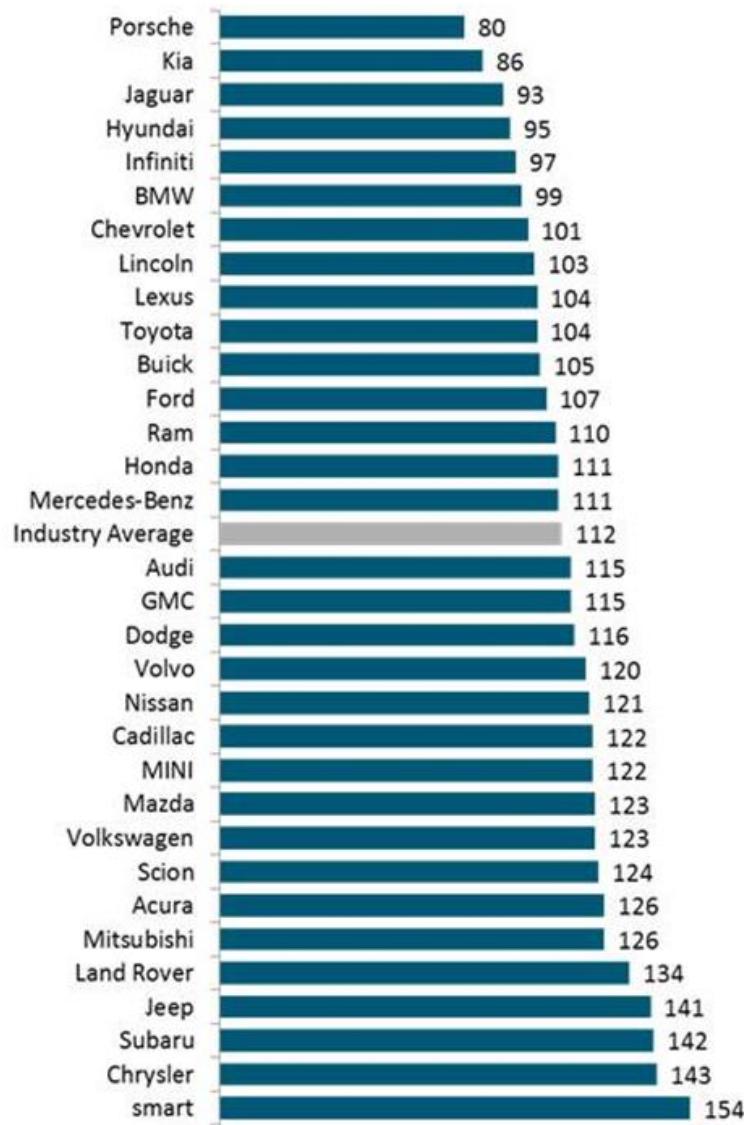
Global Market Share



JD Power IQS 2015 (US Market)

J.D. Power 2015 U.S. Initial Quality StudySM (IQS)

2015 Nameplate IQS Ranking *Problems per 100 Vehicles (PP100)*



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