

# Analysis of Volkswagen's Diesel Performance Scandal

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**How to cite this paper:** Cheng, J. Y. (2023). Analysis of Volkswagen's Diesel Performance Scandal. *Open Journal of Social Sciences*, 11, 35-42.

<https://doi.org/10.4236/jss.2023.1112004>

**Received:** October 30, 2023

**Accepted:** December 4, 2023

**Published:** December 7, 2023

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## Abstract

The research aim of this study is to investigate the reputation risk of the Volkswagen's diesel performance scandal. Many Volkswagen cars being sold in America were found to have a "defeat device"—or software—in diesel engines that could detect when they were being tested, changing the performance accordingly to improve results. This diesel performance scandal is a deliberate fraud on customers with the purpose of improving sales volumes, which brings reputation risk for Volkswagen. This study uses case study method to make analysis of this event and reputation risk. It is structured as the following: firstly, background and Volkswagen's fraud scandal event is described. Then, the concept of reputation risk is introduced. Next, Volkswagen's case is relevant to reputation risk, why the scandal happens, why Volkswagen's fraud is hidden and solutions that Volkswagen provides for the fraud event are discussed. Finally, several recommendations are provided for Volkswagen's fraud event.

## Keywords

Volkswagen, Reputation Risk, Fraud, Scandal

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## 1. Background

Volkswagen Group, founded in 1938 and headquartered in Wolfsburg, Germany, is Europe's largest automotive company and one of the most powerful multinationals in the world automotive industry (Baidu, 2023). On 18 September 2015, the United States Environmental Protection Agency (EPA) found that many Volkswagen cars being sold in America had a "defeat device"—or software—in diesel engines that could detect when they were being tested, changing the performance accordingly to improve results. After that, the German car giant has since admitted cheating emissions tests in the US (Russell, 2015). This diesel

performance scandal is a deliberate fraud on customers with the purpose of improving sales volumes, which brings reputation risk for Volkswagen and furthermore leads to reputation loss, financial loss, customers dissatisfaction, environmentalists' condemn as well as criminal accuse for the company.

## **2. Volkswagen's Fraud Scandal Event**

Volkswagen, which owns 70% of the U.S. passenger-car diesel market promoting "Clean Diesel" as an alternative to hybrid and electric vehicles, is in major trouble for cheating on diesel emissions tests (Graham, 2015). This intentional fraud with the purpose of sales improvement leads to reputation risk for Volkswagen. Following are the systematic and comprehensive analysis of the whole Volkswagen's diesel performance scandal event.

### **2.1. What the Scandal Is and How It Operates**

In terms of what the scandal is, briefly it is a deliberate fraud on customers by using special software to manipulate diesel performance in order to improve its sales volumes. Specifically, Volkswagen installed emissions software on more than a half-million diesel cars in the U.S. and roughly 10.5 million more worldwide, which allows them to sense the unique parameters of an emissions drive cycle set by the Environmental Protection Agency (Zhang, 2017). According to the EPA and the California Air Resources Board, who were tipped off by researchers in 2014, these so-called defeat devices detect steering, throttle, and other inputs used in the test to switch between two distinct operating modes: test mode and road mode (Clifford, 2016).

In the test mode, the cars are fully compliant with all federal emissions levels by cutting emissions through techniques such as adjusting air-fuel ratios and exhaust flows to render NO<sub>x</sub> harmless. But when driving normally on road, the computer switches to a separate mode which significantly changes the fuel pressure, injection timing, exhaust-gas recirculation, and the amount of urea fluid sprayed into the exhaust. Furthermore, this road mode delivers higher mileage, power and it permits heavier nitrogen-oxide emissions (NO<sub>x</sub>: a smog-forming pollutant linked to lung cancer) up to 40 times higher than the federal limit (Clifford, 2016).

### **2.2. When the Scandal Breaks and How It Is Discovered**

As for when the scandal happens and how it is discovered, we need to divide it into two phases: early warning phase and EPA notice of violation phase.

For the early warning phase, signs of irregularities in Volkswagen cars were first discovered in 2014 by the International Council on Clean Transportation (ICCT) (Niu & Liu, 2016). Specifically, ICCT summed up the data from three different sources on 15 vehicles and detected additional emissions during live road tests on two out of three diesel cars. Then the findings were provided to the California Air Resources Board (CARB) in May 2014 (Gwyn, 2015). However, though given a memo about emissions irregularities in 2014, Volkswagen in-

sisted for a year before the outbreak of the scandal and continued to install defeat devices in its cars by indicating that the decision by employees to cheat on emissions tests was made more than a decade ago.

Stepping into the EPA notice of violation phase, it means Volkswagen's diesel performance scandal breaks. On 18 September 2015 the US EPA issued a notice of violation on Volkswagen Group alleging that approximately 480,000 Volkswagen and Audi automobiles equipped with 2-litre TDI engines, and sold in the US between 2009 and 2015, had an emissions compliance defeat device installed. Such a notice of violation is a notification to the Volkswagen that the EPA believes it has committed violations but is not a final determination of liability (Wikipedia, 2016b).

In order to have a clear understanding of Volkswagen's fraud event, the following time sequence story line is structured:

Early warning before scandal broke:

- 2005, Volkswagen developed software in its diesel engines that could detect when they were being tested, changing the performance accordingly to improve results and meet emissions targets.
- May 2014, ICCT detected additional emissions during live road tests and the findings were provided to the California Air Resources Board.
- Between July 8 and September 3 2015, CARB and the EPA stopped certifying Volkswagen's 2016 diesel line-up.
- September 3 2015: Volkswagen admitted that the cars were designed and manufactured with defeat device software.

Scandal broke:

September 18 2015, the US EPA issued a notice of violation on Volkswagen Group alleging that approximately 480,000 Volkswagen automobiles equipped with 2-litre TDI engines, and sold in the US between 2009 and 2015, had an emissions compliance defeat device installed (Russell, 2015).

Reputation/financial loss after scandal broke and solutions provided:

- September 20 2015, Volkswagen ordered an external investigation.
- September 21 2015: Volkswagen ordered dealers to stop the sales of all four-cylinder diesel cars.
- September 22 2015, Volkswagen announced that 11 million diesel cars worldwide had the same "defeat device" software that evaded emissions testing. The automaker said it had set aside \$7.3 billion to cover the cost of fixing affected cars.
- September 23 2015, Volkswagen CEO Martin Winterkorn resigned.
- September 26 2015, Volkswagen appointed Matthias Müller as new CEO.
- October 7 2015, Volkswagen CEO Matthias Müller announced the recall of millions of cars around the world involved in the diesel-emissions scandal.
- November 9 2015, Volkswagen issued a Goodwill Package to owners affected.
- December 10 2015, in an internal investigation, Volkswagen said its uncovered individual misconduct, weak processes and a culture in some parts of the company that tolerated breaches of rules.

- March 26 2016, the Federal Trade Commission sued Volkswagen for deceptive advertising in its former clean diesel ad campaigns.
- April 21 2016, Volkswagen presented settlement (sell back the car or have it fixed, plus get cash compensation).
- April 22 2016, Volkswagen Group said it would take a \$18.2 billion loss on the diesel crisis, resulting in an after-tax loss of \$1.53 billion for 2015 (Julia, 2015).

### 3. Reputation Risk

Reputation risk refers any action, event or circumstances that could adversely or beneficially impact an organisation's reputation (Wikipedia, 2016a). Firms rank reputation risk as greatest risk because more than 25 percent of a company's market value is directly attributable to its reputation and companies that experienced a negative reputation event reported loss of brand value and revenue (Deloitte, 2014). Therefore, company's reputation should be managed like a priceless asset and protected as if it's a matter of life and death (Deloitte, 2014). This study is conducted to demonstrate importance of reputation risk and relevant terrible results that reputation risk brings to the company. Finally, it also should be noted that reputation risk can be managed by business integrity management, but when risk is not managed properly and a threat becomes a reality, losses can include a reduction in revenue, shareholder value and capital.

### 4. Volkswagen's Case Relevant to Reputation Risk

The Volkswagen's diesel performance scandal is relevant to the reputation risk (Dong, 2015). Recent years, Volkswagen's make advertisements by stating their vehicles are eco-friendly and win many awards in this area (Geoffrey, 2016). But it is identified that so-called Clean Diesel model sold by Volkswagen Group was a hoax and weren't really green at all. Specifically in September 2015, U.S. Environmental Protection Agency issued a shocking notice of violation indicating the software in the engine recognized the telltale signs of the testing regimen and turned up the emissions-reduction equipment when under scrutiny, but once the car was driven onto actual roads, the equipment adjusted and the vehicle disgorged up to 40 times the permissible levels of NOx (Wikipedia, 2016a). After this scandal being exposed to the public, Volkswagen admitted it, which brings horrific reputational damage to itself, furthermore led to civil fines, brand value decrease and criminal investigation results. This intentional fraudulent scandal is considered to be the severest challenge in Volkswagen's nearly 80-year history (Jordan, 2015).

### 5. Why the Scandal Happens

Following are the possible reasons about why Volkswagen's diesel performance scandal happens. We can divide them into three parts: control, incentives and culture.

Toxic internal and external controls can lead to the scandal. Firstly, Volkswagen does not have enough internal mechanisms to control and detect the scandal. Therefore intentional manipulation of individual engineers and production process cannot be found and solved timely. Secondly, the external control environment of Volkswagen is also not good. Emissions regulations are less stringent in European when compared with U.S., therefore the firm is confident that their scandal will not be punished by the European emission regulation (Sun, 2015). What worse, they put the same attitude to the U.S. market to commit scandal.

In addition, incentives for profit can also lead to scandal. It is obvious that Volkswagen has incentives to increase its sales volumes and earn more market shares and profits within industry (Jeff, 2017). By setting unrealistic goal of production, engineers are under pressure so they install this software known as defeat device without hitting the emission targets to pass the U.S. emission tests achieving firm's goal of entering American market and convincing more consumers to purchase their cars (Graham, 2015).

Moreover, culture within the company can contribute to the scandal as well. Volkswagen is known as its tolerance of rule-breaking. Specifically, its unusual culture including confident, cutthroat, insular and ruthless is considered as potentially enabling Volkswagen's lawbreaking behaviour (Jeff, 2017). Thus, employees and management within Volkswagen do not take the diesel performance manipulation seriously, which deepen the scandal finally (Geoffrey, 2016).

## 6. Why Volkswagen's Fraud Is Hidden

We identify the following underlying problems in Volkswagen's diesel performance scandal after reviewing the firm's internal investigation, which can explain how the fraud is conducted without letting the other people in the firm know. First problem is the individual misconduct of the engineers: they install defeat devices in engines without hitting emissions targets for diesel cars in the US under the permission of the managers (Graham, 2015). Second problem is the weakness in some processes: one part of mistake can flaw in the whole company processes. In addition, the third problem is the firm's tolerance of rule-breaking: the firm's unusual culture (confident, cutthroat and insular) is deemed as potentially enabling Volkswagen's lawbreaking behaviour (Jeff, 2017). Thus, combine above three problems, it is a whole chain of error and it is not easy for the board and other people within the Volkswagen Group to find the fraudulent diesel performance scandal.

## 7. Volkswagen's Solutions to the Fraud Event

After Volkswagen's diesel performance scandal breaks, Volkswagen is always trying to win back the consumers' trust and investors' confidence. Therefore it provides solutions in terms of three aspects: to affected customers, to penalties, and to affected environment (Yu, 2015).

Volkswagen provides many solutions to affected customers. Firstly, it gives

owners the option to sell affected vehicles back or have the vehicles modified to meet emissions standards, no matter which options consumers choose, they all get cash compensation (Julia, 2015). Through this way, customers can protect their benefits and reduce the dissatisfaction to Volkswagen's scandal. Secondly, Volkswagen allows consumers who have leased an affected vehicle will be allowed to cancel their lease agreements (Joel, 2016). Similarly, this way, customers will be happy because their benefits can be protected. Lastly, Volkswagen has announced a customer goodwill package to compensate affected owners (Bob, 2016) and this way, customers can benefit from it and the goodwill of the firm can also be repaired.

Volkswagen admits its diesel performance scandal and provides solutions to the penalties timely. To begin with, facing \$18bn penalties under the US Clean Air Act, Volkswagen sets aside €6.7bn to deal with it (Peter, 2015). This way Volkswagen can protect its reputation to some extent. In addition, Volkswagen also faces criminal accuse by US Department of Justice, in response to it, the firm conducts internal and external investigations to find why the fraud happens. Specifically, after investigation, it finds three reasons which contribute to the scandal together: uncovered individual misconduct, weak processes and firm's rule-breaking tolerance culture (Julia, 2015). This way, Volkswagen can prove that the diesel performance scandal is not known by other people within the firm, which can protect their reputation and gain market confidence.

Volkswagen also provides solutions to affected environment. First of all, Volkswagen conducts recall of 11 million affected diesel cars worldwide (Bob, 2016), this way the terrible diesel emission problems to the environment can reduce to some extent. Moreover, Volkswagen establishes a fund for appropriate remediation efforts to address the excess NOx emissions created by the affected vehicles (Michelle, 2016). This way, pollutions of NOx can be reduced to some degree and the environment can also be protected to some extent.

## **8. Recommendations to the Fraud Event of Volkswagen**

The recommendation part can be divided into the following two parts: identified issues summary and identified case solutions summary.

### **8.1. Identified Issues Summary**

After analysis of the whole Volkswagen's diesel performance scandal, we can identify the case issues: Volkswagen Group, which has good reputation of selling clean diesel cars around the world, is found to manipulate its diesel performance using a software that allows them to sense the unique parameters of an emissions drive cycle set by the Environmental Protection Agency when they are being tested, changing the performance accordingly to improve results and meet emissions targets (Julia, 2015). However, this scandal is found by United States Environmental Protection Agency on 18 September 2015 (Russell, 2015). This scandal is an intentional fraud on consumers with the purpose of improving sales

volumes, which brings reputation risks for Volkswagen and lead to further terrible results for itself such as: reputation loss, customers dissatisfaction, financial loss, criminal accuse and environmentalists' condemn.

## 8.2. Identified Cases Solutions Summary

After analysis of the whole Volkswagen's diesel performance scandal, we can identify the case solutions that Volkswagen provides to mitigate its diesel performance scandal. Firstly, Volkswagen provides solutions to affected customers by vehicle buybacks, vehicle modifications, cash compensation, lease agreement cancels and customer goodwill package (Julia, 2015). This way, customers will get benefits and their dissatisfaction to the scandal will be mitigated. Secondly, Volkswagen provides solutions to its facing penalties by setting aside money to deal with fines and conducting internal/external investigations to find the reasons of fraud (Julia, 2015). This way, Volkswagen can repair its reputation to some degree. Thirdly, Volkswagen provides solutions to affected environment by recalling vehicles and establishing a fund to address the excess NOx emissions created by the affected vehicles (Bob, 2016). Similarly, this way, Volkswagen can reduce emissions to environment to some extent and repair its reputation.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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