

The Network Effects of a Major Product Recall: The Case of Takata

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Abstract

This paper investigates network change after a major worldwide product recall. Takata, a Japanese airbag manufacturer, was forced in 2015 to notify its' customers of the need to recall millions of car worldwide. The impact on consumers of this recall has been well-publicised and makes for harrowing reading, 23 confirmed deaths and 200 serious injuries worldwide as a result of the faulty airbags (Dowling 2018). This paper will look at its' impact on the network of suppliers who used Takata airbags in their cars. The scale of the recall was unprecedented in automotive industry history, more than 100 million cars were affected across 24 brands but Honda, Toyota and Nissan had the highest number of affected airbags (Dowling 2018). By examining the relationships prior to the recall and those afterwards the change in the network will be shown. The paper will begin with an introduction to the industry and its major players, information on the recall will be presented and then the network change will be discussed drawing on theory of network change and dynamics.

Keywords: business networks, network change, relationships, trust, ethics

Work-in-Progress Paper

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Introduction

In 2015 Takata one of the market leaders in the airbag industry notified its' customers that a major recall was needed due to a fault in their airbags, which could lead to serious injury and death. The impact on consumers of this recall has been well-publicised and makes for harrowing reading, 23 confirmed deaths and 200 serious injuries worldwide as a result of the faulty airbags (Dowling 2018). This paper will look at this incident from a network perspective and show the major changes that occurred in the network as a result of this incident. Existing literature on network change will be presented to help understand the nature of change in networks, especially with regard to critical incidents such as this one. It will look at the industry prior to the critical incident. It will look at the history of the incident and how the customers reacted to it. It will present a network picture prior to the event and one after the event to show the huge impact this recall had on the network. Finally the paper will discuss the network change in light of existing literature.

Change in Business Networks

Network change, as an evolutionary process has long been understood and discussed in the literature (Anderson, Håkansson, and Johanson 1994, Gadde and Mattsson 1987). Many authors refer to two types of change in business networks; confined change and connected change (Halinen, Salmi, and Havila 1999, Anderson, Håkansson, and Johanson 1994, Hakansson and Snehota 1995). Confined change is characterized by the seemingly 'stable situation' that provides a platform for continuous interaction and change (Halinen, Salmi, and Havila 1999). On the other hand connected change is the idea that change in one business relationship also influences some other business relationships (Halinen, Salmi, and Havila 1999). That is, that a change in one relationship will be received and acted upon by other actors in the network. This type of change often is discussed in terms of a critical incident which is seen to be the cause of this connected change. (Anderson, Håkansson, and Johanson 1994, Halinen, Salmi, and Havila 1999)

If an incident has a decisive effect on the development of a relationship it is considered to be a *critical incident* (Anderson, Håkansson, and Johanson 1994, Halinen, Salmi, and Havila 1999). Such incidents are recognized as 'triggers' of radical change in a business dyad. These incidents can occur from either within the dyad or in the 'external' business environment (Hakansson and Snehota 1995).

What we then need to look at is to what extent changes taking place are contained with a simplest units of analysis – a single actor or perhaps taking place just within a dyad, through to more widespread changes that can affect the wider network or even whole economic systems. Halinen and her colleagues (1999) classified these extreme cases as being either confined dyadic change or changes connected to the wider network. In the former case, the effects of the changes are limited or confined to particular dyads with no impact upon any other external parties. Network changes, or the other hand, are far more widespread, affecting the interconnected parties in the network, often through 'domino effects' whereby the output of one change acts as an input to change somewhere else in the wider system. These two extremes have been noted by other authors. Håkansson and Snehota (1995) for example have a similar concept in looking at endogenous and exogenous changes, and Hedaa and Törnroos

(2008) examine ‘micro and business related change’ on the one hand, and ‘supra-macro and macro developments’ on the other. In an attempt to define the gradations more clearly Halinen et al. (1999) also talk of change taking place at the dyadic level, to those taking place within marketing channels, with small nets or triads, and then finally within the wider network.

Once the extent of the change has been ascertained the next obvious question is how innovative/disruptive/radical is the change. Halinen et al. (1999) describe the extremes as being either incremental or radical. They argue that incremental change ‘has been seen as the main mode of network change’ (1999: 780), while still recognizing that radical disruptions do occur. Incremental change is seen as likely to be continuous in nature, with radical changes more typically taking place under conditions of ‘punctuated equilibrium’ in which ‘longer periods of stability are punctuated by sudden and revolutionary changes’ (1999: 785).

In light of the discussion, the central research question of this paper is: *What effect does the recall of Takata airbags (the critical incidents) have on the business network?* Based on the literature review, the aim of this research is to examine the business network where the critical incident has occurred and identify the changes that have taken place in the business relationships as a result of the critical incident.

The Airbag Industry

Prior to the major product recall by Takata, the industry had five major players Takata Corporation, Autoliv, ZF-TRW, Toyota Gosei and KSS. In terms of market share by the early 2000s Takata was number two in the industry just behind Autoliv and considered a major player in automotive safety. In 2013 the global airbag industry was estimated to be worth USD 17.24 billion in 2013 (Transparency Market Research, 2015).

Following the recall the landscape changed considerably latest figures now show Autoliv with 34.2%, ZF-TRW on 17%, Toyota Gosei on 12% and Joyson Safety Systems (JSS) which came about when KSS acquired Takata had 8.5% of the global market share. This significant change in the industry came about directly as a result of the recall incident.

The Takata Story

Issues began to emerge with Takata airbags as early as 2001, when car owners in the US started complaining that airbags were rupturing in their cars. Following the first reported injury in 2004 both Honda and Takata dismissed the incident as a one-off. Takata claimed it did not find any faults until 2008, however it has since emerged that they carried out testing in 2004 which showed cracks in the firing assembly, they covered up the results of these tests and did not notify Honda. (Blackburn, 2018) However Honda did begin to have concerns and the US government also began to have serious concerns about the safety of the airbags. Finally in 2008 following its’ own investigations Honda announced a recall of just 4,000 vehicles. Takata at this time said the problem was identified as incorrect handling of the airbag allowing moisture to get in which subsequently reacted with the airbag propellant causing it to explode.

Interestingly Takata did not tell any other manufacturer, at this time, about the problem. The first deaths occurred in 2009 but were settled out of court, while Honda and Takata denied

any fault. Over the next few years Honda continued recalling more vehicles, while more deaths and injuries were reported. The U.S. government appointed National Highway Traffic Safety Administration (NHTSA) to work with Honda's professional technical teams to inspect Takata's airbag. Investigations found that a chemical that Takata used in the inflation system could cause the airbag to explode (Consumer Report, 2018).

By 2013 other manufacturers (Toyota, Nissan, BMW, etc.) joined the recall. Takata continued to maintain that the propellant was safe. Eventually in 2015 Honda had enough and severed all ties with Takata, they were followed quickly by Toyota, Mazda, Ford and Nissan. Honda's reason was that it found out that Takata had falsified test data. Investigations have found that one type of airbag in particular the 'Alpha' is potentially deadly and has been linked to the deaths so far.

The problem did not end there as Takata did not have capacity to replace the faulty airbags leaving many manufacturers (18 in total) with an ongoing headache. To date over 100 million vehicles have been recalled and in many countries there are still millions of cars still being driven with faulty airbags. Most recently in Australia the ACCC warned that there were still 1.6 million cars where airbags needed to be replaced and of those 19,000 are fitted with the deadly Alpha bag (Borys 2018) . It has become a nightmare for the car manufacturers. Many have resorted to hiring private investigators to find the cars most at risk. (Blackburn 2018)

The Post-Recall Network

As a result of the recall a total of eighteen carmakers had to recall vehicles to replace the airbags which were made by Takata (Wharton, 2016). The scale of the recall was unprecedented in an industry and as a result have far reaching implications for the global market. Prior to the recall the major customers for Takata were among others BMW, Fiat-Chrysler, Honda, Ford, General Motors, Mitsubishi, Mazda, Nissan, Subaru and Toyota. Honda was by far their biggest customer and had a relatively long-term relationship with them. They had been a customer for over 30 years in fact since Takata stated producing airbags in the 1980. This close long-term relationship even involved joint R&D to test the airbags safety to meet the airbag requirements of NCAP (New Car Assessment Program) in every country.

Interestingly it took Honda a while to terminate the relationship. The long-term relationship led to trust in Takata and it appears Honda believed them when they said it was not the fault of the airbag back in early 2000's. Indeed when Honda recalled the first 4,000 vehicles in 2008 they clearly felt that their relationship with Takata could weather the storm and believed that Takata were working hard to rectify the problem. The relationship was clearly built on trust, commitment and mutual expectations and Honda were willing to work with them to maintain the relationship through this crisis.

However, as the scale of the recall increased and more and more injuries and deaths were attributed to the airbags the situation became untenable for Honda and the other manufacturers. The betrayal of trust was most likely the catalyst as it became very clear from the ongoing investigations that Takata not only knew about the problem but actively covered it up. Employees came forward to say that they were forced to destroy negative test results and delete all evidence from their computers. Even worse from an ethical point of view Takata did nothing to try and replace the propellant which was the root cause of the problem. Something they should have been able to do given that they were the only airbag

manufacturer using that propellant all others used a different one which was obviously much safer.

With Takata's honesty under the microscope it became obvious that despite Honda giving them chance after chance to fix the problem, they not only did not do so but lied about it. Any trust Honda had in the relationship was severely eroded over time and resulted in the relationship being terminated. Once Honda jumped ship all other manufacturers quickly followed suit. As a result Takata filed for bankruptcy in 2017.

While this case is clearly one about the breakdown of trust, it relates to the theory of critical incidents as it shows how a network can be radically changed by just one problem. This extreme case was not confined to the dyad rather connected to the wider network. It was widespread as it affected many parties in the network, and the domino effect saw radical change throughout the network. (Halinen et al 1999).

The domino effect was not just confined to the carmakers and airbag manufacturers but reverberated throughout the whole industry. Many other actors were drawn into the incident. Safety authorities, consumer affairs agencies and governments throughout the world were all impacted. The importance of safety in cars made this a far reaching incident right down to the end-consumer. Trust in the whole network was at stake. The car manufacturers had to work hard to not only replace the faulty bags but to reassure consumers and government agencies if the safety of their products.

The process of rebuilding trust in the industry is a long one but helped by the replacement process. Notification were sent to all owners and when they couldn't be contacted they even hired private investigators to track down especially the Alpha airbags. As mentioned earlier the number of faulty airbags out there worldwide is still of concern for the car manufacturers and governments.

The landscape has changed considerably in the airbag industry, the demise of Takata opened opportunities for other manufacturers to build and develop new relationships. On terminating its' relationship with Takata Honda agreed to work with Autoliv. Here we saw referral power at work as many other car manufacturers followed Honda's lead and also moved to Autoliv. Autoliv was the biggest winner in this event. The demise of Takata gave Autoliv the chance to strengthen its market leadership and more importantly increase its' market share in Japan. Before the incident, Autoliv's sales in Japan only accounted for 9% of its' overall international sales, but after the incident they gained a huge number of orders (Sedgwick, 2017). ZF-TRW also greatly the benefit from this incident.

Key Safety System (KSS) acquired Takata for USD 1.6 billion in April 2018 and renamed their company Joyson Safety System (JSS). The reasoning behind the acquisition was to gain additional manufacturing capability, allowing JSS to be more competitive relative to the other competitors, such as Autoliv Inc and ZF-TRW (Tajitsu, 2018).

JSS's acquisition did not include the defective airbag business as the company was broken in three parts as part of its' bankruptcy, rather JSS acquired the seat belt and other safety systems. insist claiming that JSS has no relationship with the recall and Takata's debt. (Tajitsu, 2018). The Takata recall may impact on trust in JSS in the initial stage of the acquisition, but they hope that over time they can rebuild trust in their safety products.

Conclusion

This case study has shown us that a product recall can radically impact on the network as a whole. We have seen through the scale of the recall the collapse of many relationships and a total reshaping of the network. While much has been written about the recall and its' impact on end consumers this paper has shown how its' impacts reverberate throughout the whole network. It is not just the car manufacturers and airbag manufacturers who feel the impact but also various government safety and consumers agencies who were also called into action. The importance of consumer safety exacerbated this recall and emphasized the importance of trust. This product was a critical component of product safety so trust in the airbag manufacturer was tantamount to a successful relationship. Once that trust was eroded relationship dissolution was inevitable. Additionally Takata's unethical behavior in covering up the faults led to many more deaths which could have been avoided if they had behaved ethically.

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