The dissemination of negative events in supply chain networks: Circular waves as a metaphorical transfer

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Abstract

Negative events hold the potential not only to compromise companies' operations but also to significantly damage their images, identities and reputations. Cases of the most distinct nature such as product recalls, oil spills, disclosure of modern slavery, child labor, fraud, and corruption, among others, have been linked to severe penalization in the market value of the companies involved. Building on empirical evidence on the impact of negative events to supply chain partners, we develop a metaphorical transfer as an initial effort in the theorization of such phenomenon, expanding the idea that the dissemination of negative events through the inertial effect.

Keywords: Dissemination, metaphorical transfer, the inertial effect

Introduction

More than a potential source of market value destruction (Quigley *et al.*, 2017), negative corporate events (e.g. product recalls, oil spills, disclosure of modern slavery and child labour, fraud and corruption) are claimed to cause harsh reputational damage to firms directly involved (Rhee and Valdez, 2009). Global companies of the automotive industry such as Ford (Lee, 1998), Toyota (Van Doorn *et al.*, 2010), and Volkswagen (Wei *et al.* 2016), for example, have faced important negative mediatic exposure upon recall announcements, either due to security flaws in the products of the two former, or because of the discovery of environmental fraud held be the later. Independently of the cause, however, all this companies suffered significant market value penalizations, and arguably, the erosion of their reputational capital. Still, companies of the oil industry, such as Exxon Mobil (Peterson *et al.* 2003) and British Petroleum (Muralidharan *et al.* 2011) have found themselves in critic situations after the massive oil spills occurred in Alaska in 1989 and in the Gulf of Mexico in 2010. Beyond the effects for source firms themselves, studies have demonstrated that the effects of negative corporate events may not be limited to focal firms, as both industry players and supply chain partners may come to be adversely affected (e.g. Fracarolli Nunes and Lee Park, 2016; Fracarolli Nunes, 2017). If by one side empirical evidence of these collateral effects start to emerge, the theoretical bases of this phenomenon are still to be developed. Aiming to offer initial contributions on that sense and applying the Operations Management and Supply Chain Management (OM/SC) theorizing mechanisms proposed by Chen *et al.* (2013), the present study formally develops the metaphorical transfer schemed by Fracarolli Nunes

and Lee Park (2016) in their investigation of the extended effects of the Volkswagen Dieselgate. As pointed by the authors, the dissemination of negative events through the so-called *inertial effect* would be similar to "the waves caused by a stone that hits the water previously rested (Fracarolli Nunes and Lee Park, 2016:292). In that way, the image of circular waves is refined to address the propagation of negative corporate events from source firms through supply chain networks.

Literature Review

Supply chain risk

Many are the risks companies may face in the conduction of businesses. Issues such as disruptive innovation (Christensen et. al, 2006), strikes (Shorter and Tilly, 1974), consumers' boycott (Klein *et al.*, 2004), deregulation (Smith and Grimm, 1987), among others, may all affect operational activities. As pointed by Christopher and Lee (2004) the increased turbulence and uncertainties of market places would reflect, among other things, the augmented volatility of demand in most of the industrial sectors and the shortage in product and technology life-cycles. However, considering that modern competition does not refer only to individual companies, but rather to supply chains (Lee, 2000), the follow-up and monitoring of corporate risk factors limited to specific players may no longer ensure a reasonable level of predictability and safety to firms.

With the development of intricate arrangements of materials and information flows (Lee and Billington, 1993) it is possible that unfavorable fortuities arising from buyers and suppliers may come to affect not only the operations of surrounding firms, but also their perception before different groups of stakeholders. From an operational angle, Kleindorfer and Saad (2005) feature the problems arising from the lack of coordination between demand and supply and the disruption of normal activities as the two main risks related to supply chain management and design. In turn, within an arguably more comprehensive approach, Roberts (2003) relates to the reputational risks to which firms may be exposed in face of eventual sustainability fails originated within their supply networks. Whether from a more traditional view or one addressing those risks related to the intangible assets of firms (e.g. corporate reputation) the menaces to which companies may be exposed seems to accompany the complexities of the sophisticated networks developed.

Due to eventual institutional, legal and cultural discrepancies between producer and consumer markets, the exploration of forms of offshore outsourcing (Doh, 2005), for instance, may give rise to struggles around crucial contemporaneous societal concerns, mainly within a corporate social responsibility agenda. As pointed by Acquier *et al.* (2016), multinational companies may face difficulties in the concurrently meeting of global CSR integration and its local adaptation. From this landscape, beyond cases relating to child labor (Basu and Van, 1998), modern slavery (Crane, 2013), gender discrimination (Abrams, 1989) and general poor working conditions (Manik and Yardley, 2013), international supply chains have also been a fertile setting of firms' association to issues such as environmental degradation (Stern *et al.*, 1996), food contamination (Smith *et al.*, 1988) and even the funding of armed conflicts (Campbell, 2012). These factors altogether might represent additional sources of instability to firms (Beasley *et al.*, 2004), once, through a process of brand association, stakeholders may attribute or relate the faults performed by one company to other supply chain partners (i.e. reputational risks, Harland *et al.*, 2003)

Negative Corporate events within supply chain contexts

The idea that negative corporate events may disseminate across supply chain partners is present in the now classic work of Hendricks and Singhal (2003, 2005). By examining the stock market reaction to announcements of supply chain glitches and disruptions, the authors demonstrate that the impact of a negative operational event is not limited to the source firm. Instead, supply chain partners were shown to have been also penalized by investors. In extending the analysis, Fracarolli Nunes (2017) explores the dissemination of other types of events, such as environmental disasters, corporate social irresponsibility, operational failure, fraud and corruption. Beyond providing additional empirical evidence on the effects of negative corporate events beyond the organizational borders of the source firm, the author coined the term "supply chain contamination" to define the situation. Accordingly, supply chain contamination would stand for "the dissemination of negative events through supply chains, negatively affecting not only the market value of customers and suppliers (possibly that of customers of customers and suppliers of suppliers and so on), as well as potentially other dimensions such as corporate reputations, for instance." (Fracarolli Nunes, 2017:9).

The collapse of the Rana Plaza in 2013 and the numerous fires in sewing workshops in Bangladesh in which thousands of workers lost their lives illustrate the idea. Following the immeasurable human cost of these tragedies, companies of the fashion industry such as H&M and Inditex-Zara (Ek and Kane, 2013) were directly or indirectly linked to the cases, facing an arguable damage to their images. Add to that the fact that the operations of firms seem to be under regular vigilance of both national governments and non-governmental organizations (e.g. Greenpeace, Sea Shepard), which invigilate and, at time, place severe accusations against multinational companies in face of unsustainability practices held be suppliers (e.g. Nestlé, Unilever and Procter and Gamble targeted by using palm oil claimed to cause deforestation in south-east countries in Asia). In that way, the attachment of the images of lead firms to the unsustainable practices held by suppliers must be particularly threatening.

It seems, though, that similar results may emerge from issues not directly related to environmental and social issues. Cases of lead contamination involving imported or outsourced products just as low-cost jewelry (Weidenhamer and Clement, 2007) and toys (Levin *et al.*, 2008) have forced firms to go through costly (Tang, 2008) and image damaging recalls (Hora *et al.*, 2011, Kumar and Schmitz, 2011). Following the revelation of exaggerated levels of lead in diverse toy surface paints, global toy company Mattel engaged in the recall of approximately 14 million units of its products over a period of 19 months (Gilbert and Wisner, 2010). As discussed by the authors, investigation showed that issues concerning both the designing process and poor manufacturing practices of Chinese contractors and subcontractors of the company accounted for the main causes of the controversy. Still accordingly, the episode resulted in numerous lawsuits and regulatory actions against Mattel, producing, among other things, a severe deterioration of its reputation.

The cases discussed above suggest some sort of chain reaction on which the effects of a focal event spreads to upstream and downstream supply chain partners. Cases within the industry level of analysis, however, seem to also corroborate this supposition. In this way, at the same time accounting scandals of the early 2000s are believed to have deflagrated a general mistrust in the integrity of American companies, such episodes have also heightened opportune ethical questions over given management practices (Carson, 2003). Among those cases, the Enron scandal revealed the conduction of systematic accounting fraud in the supporting to the apparent sharp growth of the company (Li, 2010). Accordingly, the case stood for the largest bankruptcy reorganization ever held in

America, as well as for the most representative audit failure. Beyond the bankruptcy of the Enron corporation itself, the scandal also dragged Arthur Andersen (which was among the largest audit and consultancy firms back then) into an unparalleled reputational impairment, with the defamation ending up in the dissolution of the company. Losses to Enron shareholders are estimated to be around USD 11 billion (Li, 2010). Residually, numerous Arthur Andersen's clients were claimed to be indirectly affected. Harsh questionings over the validity of their financial reports followed the disclosure of the case, driving these companies into considerable losses in terms of market value (Reitenga *et al.*, 2010; Chaney and Philipich, 2002).

As also illustrated by these cases, it may be argued that negative episodes indeed hold the potential to tarnish the perception that customers, employees, investors and other stakeholders have around firms not directly involved. As these and other anecdotal evidences may suggest, global companies placed as supply chain leaders may concentrate the liability of negative episodes perpetrated in their respective networks, similarly to lightning bolts under a storm. Although lead firms may be perceived as being jointly responsible for the implementation and supervision of responsible practices in global value chains, ultimately, problems tend to be originated outside their organizational borders. In this sense, the perception that a firm may be negatively affected by a fail occurred in or caused by another firm demands a further comprehension not only around the importance of such effects, but also on the mechanisms through which the behavior of one firm may possibly 'contaminate' another. The reasoning motivates the present study. Nevertheless, if by one side several issues in different types of supply chain formations must be risky in that regard, the combination of corporate social irresponsibility matters with the mosaic and convoluted relations of firms within global value chains seems notably propitious to this sort of observation. The following section discusses thus the metaphorical transfer designed to account for this issue.

Metaphorical Transfer

As discussed by Chen *et al.* (2013), Tsoukas (1991) and Garud and Kortha (1994) argue that metaphorical transfers must evidence conceptual parallels linking the proposed metaphor to the target phenomenon at the levels of ontology, analogy and identity. While the ontology level shall exhibit "logical correspondence between the constituent elements of the metaphor and the target" (Chen *et al.*, 2013:580), the analogy level would be that which "demonstrates correspondences between the relationships among constituent elements of the metaphor and relationships among constituent elements of the target". Figure 1 below represents the ontological and the analogical equivalences between the elements that constitute the metaphor of circular waves and the target of dissemination of negative events in supply chain networks, and the identity equivalence between the metaphor and target:

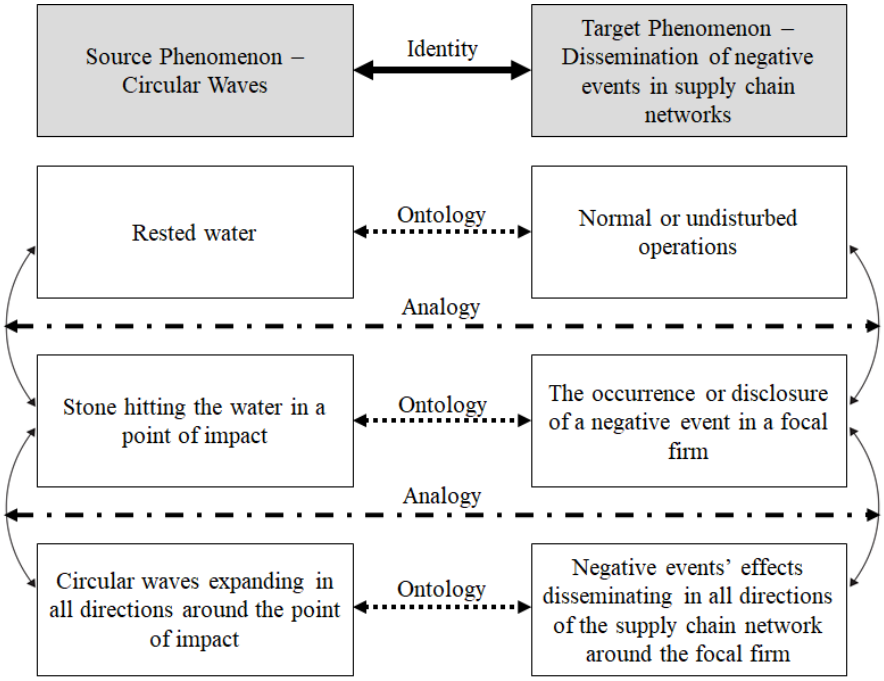

Figure 1: Equivalence at the ontology, analogy and identity levels for circular waves and dissemination of negative events in supply chain networks

Similar to Chen *et al.* (2013), we turn to three different aspects to demonstrate the analogical equivalence between the metaphor of circular waves and the target of dissemination of negative events in supply chain networks. The *perturbation aspect* reflects the stone hitting the water in a point of impact, and therefore perturbing the equilibrium of the system. On the target phenomenon, such perturbation would be triggered by the occurrence or disclosure of a negative event to impact the normality of operations. The *central aspect* relates to the strong effect encountered on the point of impact between the stone and the water and, on the target phenomenon, would translate into a negative event strongly affecting the focal firm. Finally, the *decreasing force aspect* illustrates the circular waves' decreasing intensity as they propagate from the impact point to the periphery. In supply chain networks, negative events' effects would also disseminate with decreasing intensity, meaning that supply chain partners are decreasingly affected as they departure from the focal firm. In this sense, first tier partners would be more strongly impacted than second tiers ones, and so on.

Once ontological and analogical equivalences are found, more general principles that simultaneously explain aspects of both the metaphor and the target may be drawn in the highest level of identity (Chen *et al.*, 2013). As taught by Ketchen and Hult (2001), the identity-level principles represent generalizable insights, which finally provide the theoretical rationale supporting the idea that the metaphor and the target may be considered identical (Garud and Kotha, 1994). Within this reasoning, three principles are identified as generated from the previous equivalences:

Principle 1. The central principle: Focal firms relative to any given negative corporate event will more strongly absorb its effects.

Principle 2. The dissemination principle: The effects of any given negative corporate event will not be restricted to the focal firm. Instead, supply chain partners will also be negatively affected.

Principle 3. The decreasing force principle: As the effects of any given negative corporate event disseminate through supply chain networks, they will affect partners less strongly as they departure from the focal firm, until its force ceases.

Discussion and Conclusion

Along with other economic factors, the increased pressure for cost reduction and cost savings have been pointed as consistent elements on firms' outsourcing decisions (Hung Lau and Zhang, 2006), It is possible, though, that, beyond externalizing portions of their operations, the most attractive opportunities in terms of cost optimization come to be presented in distant countries and cultures. Within an internationalization perspective, geographically spread suppliers – mainly those located in under developed and emerging countries (e.g. China, India, Bangladesh, Malaysia) - have traditionally offered multinational companies low-cost services and products in areas such as software development (Sahay *et al.*, 2003), information technology (Earl, 1996), telemarketing (Pfannenstein and Tsai 2004) and garment production (Hale, 2000), to name a few.

However, beyond a purely cost reduction approach, the joint assessment of the economic, political and social institutional roles of firms may pose difficulties to the delimitation of their social responsibilities upon domestic or international outsourcing (Jones, 2005). In this sense, a clearer classification of the responsibilities of organizations involved in such processes, either as a contractor or a supplier, may be vague. As heretofore stressed, it is possible that the consequences of the conduction of these or other condemnable business practices may overflow from one company to another, affecting their credibility, reputation and financial stability. Along with other issues, these questions may sensibly increase the levels of risk that supplier chain players have to consider. In that way, the theorization of the process through which firms not directly involved in negative events becomes urgent, gap which the present study seeks to help fulfilling.

From the rational proposed above and from the metaphorical transfer discussed the theoretical basis of the dissemination of negative corporate events through supply chain networks is proposed. Nevertheless, considering the nature of circular waves the same rational could be applied to the extended effects of perturbations on other stakeholders such as competitors, governments communities and societies in general. In that way, the metaphorical transfer may be useful not only for the literature on OM/SCM but also for the analysis of other aspects of social sciences.

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