

INSEAD

The Business School  
for the World®

Social Innovation Centre

# Faculty & Research Working Paper

**A Crowd of Watchdogs:  
Toward a System Dynamics Model of  
Media Response to Corporate Social  
Responsibility and Irresponsibility  
Initiatives**

---

Maria BESIOU  
Mark Lee HUNTER  
Luk N. VAN WASSENHOVE  
2010/28/TOM/ISIC

# A Crowd of Watchdogs: Toward a System Dynamics Model of Media Response to Corporate Social Responsibility and Irresponsibility Initiatives

Maria Besiou \*

Mark Lee Hunter \*\*

and

Luk N. Van Wassenhove \*\*\*

\* Research Fellow at the INSEAD Social Innovation Centre, Boulevard de Constance, 77305 Fontainebleau, France Email: [maria.besiou@insead.edu](mailto:maria.besiou@insead.edu)

\*\* Adjunct Professor and Senior Research Fellow at the INSEAD Social Innovation Centre, Boulevard de Constance, 77305 Fontainebleau, France  
Ph: +33 (0) 1 60 72 48 92 Email: [mark.hunter@insead.edu](mailto:mark.hunter@insead.edu)

\*\*\* Professor of Operations Management, The Henry Ford Chaired Professor of Manufacturing at INSEAD and Academic Director of the INSEAD Social Innovation Centre, Boulevard de Constance, 77305 Fontainebleau, France  
Ph: +33 (0) 1 60 72 42 66 Email: [luk.van-wassenhove@insead.edu](mailto:luk.van-wassenhove@insead.edu)

A working paper in the INSEAD Working Paper Series is intended as a means whereby a faculty researcher's thoughts and findings may be communicated to interested readers. The paper should be considered preliminary in nature and may require revision.

Printed at INSEAD, Fontainebleau, France. Kindly do not reproduce or circulate without permission.

## Abstract

This article applies system dynamics analysis to understand the interaction of actors whose opinions and activities impacted on corporate initiatives in the Danone boycott of 2001 (Hunter et al. 2008) and the “Beyond Petroleum” branding campaign of BP P.L.C. in 2001-2005 (Hunter et al. 2010). The analysis shows a complex interaction of 59 feedback loops in the two cases, demonstrating how at different moments, different stakeholders play a highly visible watchdog function in defence of their own interests. Over time, the delayed responses of stakeholders combine into new vectors of influence, stabilising or disequilibrating different points of the overall system. In one of our cases, these dynamics partially explain the paradox of how “doing well by doing good” may be transformed into “looking bad by doing good.” In the other case, these dynamics indicate why management efforts to frame divisive issues in a positive manner for the firm failed. Both cases suggest how factors identified in previous research, such as attributions of motive to actors in a crisis, may be amplified as correlations between distinct objectives are established by stakeholders occupying positions in various sectors of the organisational environment. We conclude that initiatives aimed at reinforcing organisational image or reputation may be less dependent on the responses of individual actors than on the effects generated by feedback loops within the overall system within which such initiatives occur. Thus attempts to disrupt the system may increase the risks for an organisation, by increasing its isolation relative to other actors.

## **I. Introduction: Assessing the benefits and risks of corporate social responsibility and irresponsibility through system dynamics analysis**

### **A. Stakeholder media: an emergent watchdog of corporate responsibility and irresponsibility**

Within the past decade corporate social responsibility (CSR) moved from a marginal to a central concern among managers: It has been predicted that by 2011, fully 70% of corporate executives will give CSR a high priority (Franklin 2008). However, evidence of a direct relationship between the presence of CSR initiatives and increases in revenues or profits, or even benefits to reputation, remains ambiguous. One of the most comprehensive assessments to date, a meta-analysis of effects arising from diverse CSR parameters evoked in 167 studies (Margolis et al. 2007) concluded that corporate social performance (CSP) “does not systematically destroy shareholder value. The overall effect of CSP on CFP [corporate financial performance] is positive.” However, this effect appeared weak. DeMacarty (2009) argues that “the financial returns of corporate social responsibility and irresponsibility (CSR and CSI) are equal on average”, and must be so, “because if one or the other were to offer higher profits, it would attract more players who would compete for the best opportunities until there was no difference in average profit.” DeMacarty dismisses empirical research that positively correlates CSR and financial performance, arguing that “what is actually causing that finding is probably not CSR but management skill.” Research in France identified positive financial benefits from CSR, but only when CSR was defined as virtually identical with generally recognised good management practices (Maignan and Ferrell 2001).

Conversely, firm activities deemed by stakeholders to be socially *irresponsible* may generate reactions that impact measurably on market share, growth, revenues and market capitalisation, as in the case of a social movement that targeted Danone SA (Hunter et al. 2008). These results partially confirm the prediction of McGuire et al. (1988, p. 856) that “low levels of social responsibility may increase a firm's financial risk.” Their catalogue of such risks identifies factors that surfaced in the Danone case, as well as in the case of BP’s “Beyond Petroleum” branding campaign (Hunter et al. 2010; we will refer to both cases in detail during this paper):

*“Investors may consider less socially responsible firms to be riskier investments because they see management skills at the firm as low.... Investors and other constituencies may also anticipate an increase in firm costs owing to lack of social responsibility. For example, the government may levy fines, and law suits, such as those recently filed against pharmaceutical, chemical, and asbestos firms, that may threaten a firm's very existence.”*

It can more clearly be demonstrated that “corporate misdeeds are costly to companies” (Margolis et al. 2007). Porritt (2005) identified the risk of a “Bottom Line Backlash” effect on reputation, embodied in “hostility to companies that are seen as making large profits at the expense of other stakeholders.” Not surprisingly, as Baron and Diermeier (2006) found, CSR reputation initiatives may arise more as a defensive strategy aimed at avoiding conflict with stakeholders than as a contributor to the top or bottom lines. It may be no coincidence that CSR efforts accelerated remarkably worldwide following the catastrophes for public perceptions of business embodied in the Enron affair and dot-com meltdown of 2001-2

(Middlemiss 2003).

However, these initiatives may (and sometimes do) create supplemental risks. CSR initiatives can backfire on a firm's reputation – in a general sense, by exposing firms to charges of obfuscation or hypocrisy by the news media (Dickson and Eckman 2008), and because consumers may sceptically attribute self-seeking motives to firms that undertake CSR initiatives (Vlachos et al. 2009). The literature on crisis communication underlines the important role that attributions and admissions of motivation and responsibility may play for firms caught in potentially catastrophic situations (Coombs 2004). Thus Ulmer and Sellnow (2000) argue that the underlying risk of a crisis is a loss of “social legitimacy” for a firm that is perceived as acting irresponsibly, leading stakeholders to withhold approval of the firm. Such loss of approval has been shown to affect the engagement of such stakeholders as potential investors and employees (Van Halderen 2007).

Most interesting from our perspective is that such attributions, whether positive or negative, appear to be a structural element of response to and risk for CSR or CSI actions on the part of a firm. In other words, they evoke a *system* through which the reputational, financial or commercial impacts of CSR or CSI initiatives may gain or lose momentum as they enter into contact with various stakeholders. One such system has been identified in an analysis of six corporate accidents occurring in Japan in 2002, in all of which “whistle blowers” played a key role in exposing management wrongdoing to regulators and public opinion (Tsuchiya 2003). In these cases Tsuchiya perceived “low business ethics” and a low degree of openness as key components of the systems involved, which led to costly conflict with key stakeholders. In a more general sense, Werhane (2002) argues that management dilemmas may be usefully viewed as “arising from within a system with interdependent elements, subsystems, and networks of relationships and patterns of interaction.”

One influential component of such systems appears to be the growing presence of “stakeholder media”, controlled by parties more or less directly concerned by organisational actions, which have been shown to achieve effects on the opinions and actions of other stakeholders even in the absence of news media coverage (Hunter et al. 2008). The phenomenon is increasingly present in the scholarly literature, though its nomenclature has not yet been settled. Fassin (2009) refers to stakeholders who monitor organisational actions as “stakewatchers”, and notes that they may include activist groups, unions, competitors, environmental groups or political groups. In the current moment, virtually all of these groups create and distribute media content aimed at furthering their objectives through print, websites or other formats. Fassin distinguishes between such stakeholders and the news media, which he groups among “stakekeepers”. He defines stakekeepers as outside or independent monitors with varying levels of authority, control or influence over other persons or entities; besides actors in the news media, they may include regulators or ratings agencies. The actions of stakekeepers find their expression in laws, norms, codes, or critical analyses. They may exert a coercive power through these means as well as control mechanisms. Fassin observes that it is not unusual for serious and justified requests from consumers, employees and other pressure groups of stakeholders to be conveyed by the news media and then gradually adopted by the authorities and eventually enshrined in the law. The term “infomediary” has also been used recently to describe a similar role. The “direct adoption” of the concerns of “infomediaries” depends on factors such as the corresponding public interest at a given moment, or the influence that a given stakeholder group may exert on other actors (Deephouse and Heugens 2009). All of these definitions are coherent with Werhane's (2002) observation that “in studying organisations one cannot forget that they are embedded in a

political economy or economies that affect their operations and well-being.” Stakeholder media, however one names them, apparently pose a challenge to organisational leadership that is at once operational and consequential: They may enable or disable initiatives by creating risks that impact on the wisdom or feasibility of organisational strategies and initiatives.

This paper argues that stakeholders and their media may generate effects that go well beyond immediate and direct adoption of their concerns by other actors, and which may appear only after a certain delay has elapsed. The length of that delay may be affected by factors such as exogenous events that render specific stakeholder causes more credible or urgent. It may also depend on the emergence of stakeholders who are not present, or not influential, at the outset of a given sequence of events. These effects are appearing in concert with growing numbers, reach and capacity of stakeholder groups and their media (Scherer and Palazzo 2010). These media visibly empower such stakeholders as a firm’s employees in new ways, notably by enabling them to attract the attention of other stakeholders whose own actions, in support of their own objectives, may impact the firm. In certain cases, it is as though a firm were surrounded by a crowd of watchdogs, each barking in defense of its own territory. Thus in the Danone boycott of 2001, union activism supported by Internet-based protestors eventually convinced financial analysts and investors that management’s assessment of the crisis and its outcomes were not credible, with severe consequences for the firm’s share price and strategy. Likewise, BP P.L.C.’s “Beyond Petroleum” branding campaign in 2000-2005 was undermined by employee claims, transmitted first through activist websites and then through a major financial newspaper, that the firm was neglecting safety and environmental obligations in violation of its own stated values. Here, too, some investors responded negatively, and so did industry regulators. Few of the effects generated in these two cases were immediate, and outcomes were dependent to different degrees on the actions and responses of diverse stakeholders. These stakeholders held different objectives, which were expressed according to their own timetables. (Regulators, for example, are not principally concerned with a firm’s share price over the next trimester, as investors are.) The interaction of these varying concerns and objectives generated certain outcomes that could not have been predicted by any stakeholder. In particular, some outcomes counteracted the evident desire of managers to be seen as “doing well by doing good”.

In this article we draw on the Danone and BP cases to set out the foundations of a general system dynamics model through which such reversals of reputation and strategy operate. Like Tsuchiya (2003), we have chosen system dynamics methodology because the phenomena mentioned in the preceding paragraph – time lags, feedback loops, and complex interactions that render outcomes non-linear and less predictable – are likewise features of system dynamics models. Consequently, our focus is less on the motivations of the actors involved in the cases than on the pathways through which their actions and media inputs influence other actors, directly or indirectly, and on the cumulative effects that these diverse inflections may, over time, have on a given outcome. We begin with summary descriptions of the cases used in our model. Then, we briefly summarize system dynamics methodology. The core of the article begins in Section II, where we diagram successive steps in the dynamics visible in our cases. In Section III, we summarize the resultant models in single diagrams for each case, and then compare these models to events in the cases to see if they have captured relevant data. In the succeeding, final section (IV) we discuss our results and their implications for organisations and their stakeholders.

## **B. Summary of the Danone and BP cases**

### **1. The Danone Boycott (Hunter et al. 2008)**

In January 2001, the revelation through a leak to a major newspaper that Danone SA, one of France's most successful and admired firms, intended to downsize biscuit operations in its home market led to what observers called an unprecedented "political boycott." Union action was supported by deep public outrage that a profitable firm was shedding jobs, and politicians joined the pack. Danone's offer of a humane termination program for workers did not succeed in calming opinion, and in April unions launched a nationwide boycott. News media predicted the boycott's failure, while activist "stakeholder" online media promoted it, inspiring Danone to file various charges against the online publishers. Rumours that the boycott was succeeding began circulating in May, but were dismissed by the firm's CEO at a Shareholder General Assembly. Management's denials were accepted by the news media, which largely abstained from further coverage of the boycott and labour protests. Late that summer, the discovery by financial analysts that the boycott had indeed impacted Danone's sales, followed by indications that continuing labour action was impacting operations, sales and growth across Danone's three main product lines, contributed to an investors' flight that was accelerated by the events of 11 September 2001. The decline in Danone's stock price proved tenacious (and led to repeated takeover attempts). So did disruption in the biscuit branch, which was finally redressed only to be sold in 2007 for less than twice annual revenues of the division.

### **2. The Beyond Petroleum campaign (Hunter et al. 2010)**

The announcement that BP P.L.C., the world's second-largest oil firm, was branding itself as "Beyond Petroleum" in 2000 generated widespread scepticism followed by admiration in the press and among investors, and aggressive responses among environmentalist groups. Almost immediately, Greenpeace occupied one of BP's arctic drilling operations, and sought to organise BP's activist shareholders against management. The main threat to BP's operations, however, came from within, as employees at the firm's Prudhoe Bay field in Alaska seized on the high ethical standards proclaimed by "Beyond Petroleum" to attract attention for their claims that BP was failing to meet its own safety and environmental standards. A series of accidents at Prudhoe Bay, publicised first by activists operating their own "stakeholder" media online, and then by news media, drew the increasingly severe attention of regulators, who ultimately posed a serious threat to BP's control of its own operations in Alaska. Early in 2005, a catastrophic accident at BP's refinery in Texas City and an oil spill in Alaska severely damaged credibility of the "Beyond Petroleum" brand, despite major investments by BP in alternative energies. The phrase was quietly dropped from BP's promotion, though it remained in popular use.

## **C. A brief introduction to system dynamics methodology**

The system dynamics framework is a powerful methodology for obtaining insights into problems of dynamic complexity (Coyle, 1979, 1996; Sterman, 2000). A fundamental issue of contemporary system dynamics is how, as Sterman puts it in "Business dynamics: Systems thinking and modeling for a complex world", "Many times our best efforts to solve a problem actually make it worse". Sterman posits that firms operate in a web of actors and influences that makes it extremely difficult to discern between the causes and the effects of actions and

reactions. Moreover, over time the complexity of a given system of actors, actions and outcomes tends to increase, reducing a given actor's control or ability to obtain desired outcomes.

System dynamics (SD) methodology emerged, precisely, in response to the increasing observable complexity of organisational objectives and outcomes. Forrester (1961) introduced SD in the 1960s as a modeling and simulation methodology in dynamic management problems. Sterman (1991) observed that "if the system to be optimized is static and free of feedback, optimization may well be the best technique to use". However, more and more organisational systems include feedback processes (explicit and desired, or unrecognised and unwanted by initiators) and uncertainty, which demand more complete analysis to enable better decision making. In these circumstances SD appears as an appropriate tool to develop dynamic models with a holistic approach that captures interactions among different components of a given system.

To paraphrase Sterman (2000), the steps of modeling in system dynamics are:

- a) Select the boundary of the system under study by finding out what the real problem is and understanding the key variables.
- b) Formulate a dynamic hypothesis that explains the dynamics as endogenous processes of the feedback structure. In this step causal-loop diagrams, which map inputs and feedback paths, can help in understanding the causal structure of the system.
- c) Formulate a simulation model and estimate the parameters and initial conditions.
- d) Test the model to check its quality.
- e) Evaluate different policies to see how their effects may impact the behaviour of the overall system.

In the next section of this article we will be concerned with the first two steps of Sterman's process – identifying bounded systems, then identifying endogenous processes and diagramming them as causal loops, based on the Danone and BP case studies. We proceed by treating each phase of the cases as a bounded sub-system, with its own inputs and feedback loops. Our aim here is to understand the interaction of the CSR or CSI initiatives of the firms under study with news and stakeholder media, and to depict it. Thus we attempt to model the destinations of media content generated by actors in the systems that we identified from our case studies. The specific content is abstracted from the model, though we cite points from the case studies in footnotes as data references for the model's features. *Our overriding concern is not with attribution effects arising from content, but with the paths that the content takes, and the feedback it thereby creates as it moves through the system.* Our assumption is that not only the particular features of the content, but also the ways in which the dynamics of the system amplify and distribute feedback to that content may be of importance.

The following section presents respective system dynamics models for the Danone and BP cases. We demonstrate the differences between the two models, and confirm the usefulness of a system dynamics approach for anticipating media response to organisational initiatives. Finally, in section IV we present a summary of our study, recommendations for organisational leaders, and propositions for future research directions.

## II. Building a system dynamics model of CSR/CSI media interactions

In this section we present SD models of interactions between CSR or CSI actions and the ways in which these interactions become media content that is transmitted among various actors. As we proceed we combine the sub-systems previously diagrammed, extending their effects from one loop to another. The resultant cumulative model consists of many feedbacks, which confirms the complex nature of the system under study.

In system dynamics, causal-loop or influence diagrams are used to represent the structure of systems. Causal-loop diagrams play two important roles. First, during model development, they serve as preliminary sketches of causal hypotheses. Secondly, they describe the major feedback mechanisms of the system (Coyle, 1996; Sterman, 2000). These mechanisms are either negative feedback (balancing) or positive feedback (reinforcing) loops. Put another way, the cycles in these diagrams represent causal loops with negative (-) or positive (+) feedbacks.

A feedback loop is a succession of causes and effects such that a change in a given variable travels around the loop and comes back to affect the initiating variable. The polarity of a feedback loop is obtained by the algebraic product of individual signs around the loop – that is, the balancing (negative) or reinforcing (positive) effect of each variable – and is represented by B (for balancing) and R (for reinforcing) signs.

A negative feedback loop exhibits goal-seeking behaviour: after a disturbance, the system seeks to return to an equilibrium situation. In a positive feedback loop an initial disturbance leads to further change, suggesting the presence of an unstable equilibrium. Arrows (or influence lines) represent the relations among variables. The direction and sign (+) or (-) at the upper end of each influence line explain the cumulative impact of the variables. Thus if an initial increase or decrease in one variable in a feedback loop eventually results in a similar effect on the same variable, then the feedback loop is identified as a *positive* feedback loop. We repeat that the term “positive” does not necessarily signify that the outcome is the one we would most enjoy. It *does* signify a dynamic through which initial effects are reinforced. Thus positive feedback loops may potentially stimulate unstable exponential growth or collapse patterns in a system’s behaviour.

If an initial increase or decrease in a variable eventually results in an inverse effect on the same variable, then the feedback loop is identified as a *negative* feedback loop. This terminology does not necessarily signify unwanted outcomes; in reality, negative feedback loops generally signify desirable outcomes. Negative feedback loops potentially equilibrate a system, because they stimulate stabilized growth and decay patterns.

The density and interaction of these loops may be of surprising complexity: Our analysis has identified 59 feedback loops underlying events in both the Danone and BP cases. Of course, not all these loops can be of equal importance for organisational leaders or their adversaries; we will address that issue in our discussion. But first we must understand the structure of the loops behind these cases. Readers who find this process fastidious may wish to skip to Section III.

In the remainder of this section we model our 59 loops in 11 diagrams. The diagrams begin with single loops and become progressively more rich. In the text, *variables* appear in italics

to emphasise their significance; regular typefaces are used in diagrams. Footnotes briefly recapitulate data and page citations from our cases that support specific features of each loop; the cases (Hunter et al. 2008, 2010) will be referred to respectively as “Danone” and “BP” for the sake of brevity.

### A. Interaction of investors’ reactions with a firm’s profitability: A general case

Loop R1 depicts the following general dynamic: The vast majority of firms aim at the optimisation of their profitability (*Firm’s Profitability*), which increases through *Sales* and decreases through the *Firm’s Cost*. The firm’s *Sales* increase through *Market Share*, which depends in part on the *Firm’s Image*; hence management may assume that the better the *Firm’s Image* of the firm’s products or services, the higher its *Market Share* will be. A decrease in the *Firm’s Profitability* incites its *Investors’ Reaction*, decreasing the *Stock Price*, and after a time delay, likewise decreases the *Firm’s Profitability*. Hence an initial decrease in one variable in this feedback loop (the *Firm’s Profitability*) eventually results in a decreasing effect on the same variable. This identifies the loop as a positive (reinforcing) feedback loop, represented in figure 1.

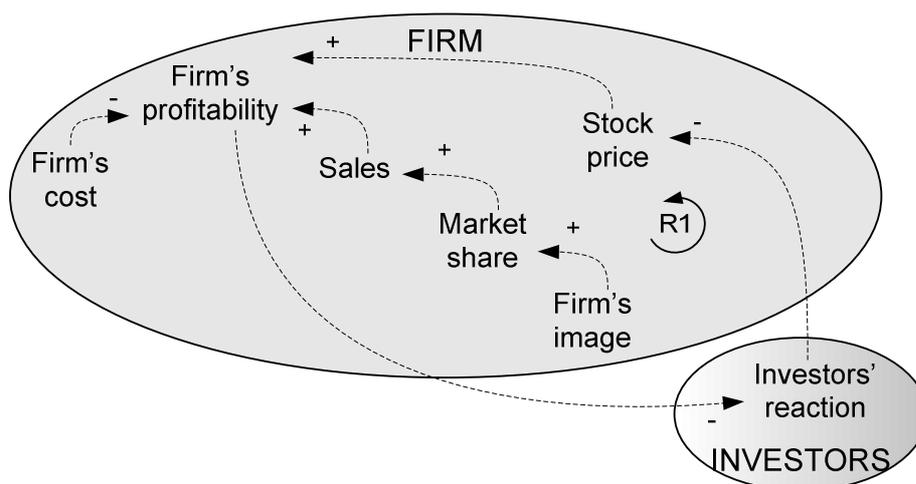


Figure 1: Interaction of investors’ reactions with a firm’s profitability

### B. Interaction of the firm’s profitability with an operational change

The management of a firm, in order to increase the *Firm’s Profitability*, makes a decision (and thus creates a trigger event) that changes something in the firm’s extant operations. This *Change* aims either to increase *Sales* or to decrease the *Firm’s Cost*, and thus typically affects the firm’s processes, capacity or quality of output. (We note in passing that such changes are most effective in relatively simple environments, where cause-and-effect relationships are straightforward and easily discovered (Sengupta et al. 2008)). These changes, in turn, may provoke workers’ resistance (*Worker Resistance*). This *Change* may take the form of restructuring<sup>1</sup>, as in the Danone case, or of perceived alterations in corporate priorities<sup>2</sup> or

<sup>1</sup> Management’s plans of the Danone were leaked to the press, and its refusal or inability to confirm or deny reported information led immediately to wildcat strikes and other labor action; p. 337.

<sup>2</sup> The announcement that BP was moving “beyond petroleum” generated visible unease among its core business employees, which was acknowledged in a subsequent news report by a firm executive; p. 7.

safety standards<sup>3</sup>, both of which affected BP. In both cases, a perceived or potential decrease in the *Firm's Profitability* causes the trigger event; an initial decrease in this variable eventually results in an increasing effect on the same variable identifying the feedback loop as a negative (balancing) feedback loop (Loop B1, represented in Figure 2).

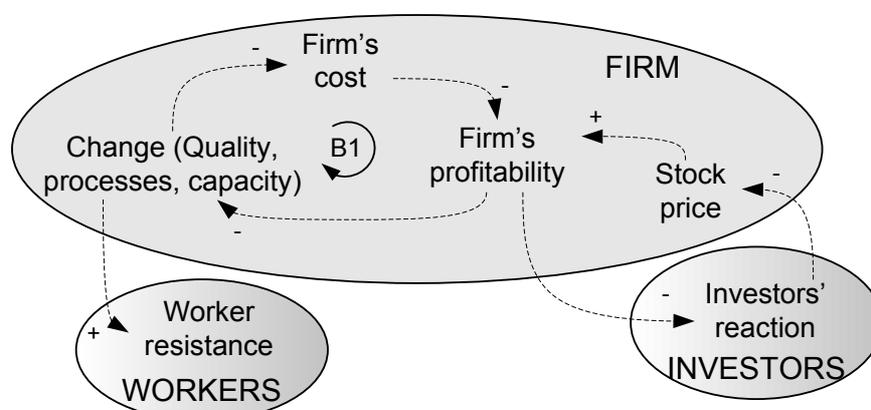


Figure 2: Interaction of the firm's profitability with an operational change

### C. Interaction of the firm's profitability with stakeholder media

In Loop B1 the firms operate without prior knowledge of news and stakeholder media responses to the workers' resistance. However, both forms of media expose the firm to risks. The *Worker Resistance* can leak or openly volunteer information to news<sup>4</sup> or stakeholder media (referred to in our diagram as *STK*, and including media such as strikers' tracts, online articles, financial analyst reports, or pro-worker websites)<sup>5</sup> and these reports may result in various impacts on the firm. One such impact is *Mobilisation* of adversaries, which can lead to a *Social Movement*<sup>6</sup>. The movement may have negative impact on the *Firm's Image*<sup>7,8</sup> (Klein et al. 2004) and on its *Market Share, Sales and Firm's Profitability*<sup>9</sup>. This may lead to different *Change* and *Worker Resistance* in terms of magnitude or kind (Loop R2, depicted in Figure 3).

<sup>3</sup> Like all the major oil companies, BP was under considerable pressure to improve its margins. This led to the accusation by workers, cited in the press, and true or not, that the firm was economising on safety and staffing in order to control costs; pp. 14.

<sup>4</sup> Workers at Danone welcomed attention from news media, which published sympathetic portraits of plant employees slated for restructuring, pp. 335, 338; BP workers fed information directly and indirectly to stakeholder media (such as The Project on Government Oversight ([www.pogo.org](http://www.pogo.org)) concerning the firm's Prudhoe Bay operations); pp. 13-14.

<sup>5</sup> Danone workers sought to support their boycott movement by distributing tracts listing all brands owned by Danone, p. 339; BP workers were supported by a self-defined "advocate", Charles Hamel, who was widely quoted by anti-globalist and anti-industry sites; pp. 13-14

<sup>6</sup> The boycott of Danone spread from workers to Left politicians of numerous towns, other unions, and a national consumer boycott movement, supported by a network of Internet sites; pp. 338-340.

<sup>7</sup> Danone took the negative publicity generated by the forces cited in Note 6 seriously enough to pursue its Internet-based critics for libel in a series of civil actions; pp. 340, 341.

<sup>8</sup> BP faced widening criticism from shareholders and increasingly hostile attention to its Prudhoe Bay operations as a consequence of employee-generated publicity; pp. 15-17.

<sup>9</sup> During the most active period of the boycott, Danone's sales in its home market of France declined by approximately 10%. Labour action also impacted Danone's logistics across product lines. Danone later reported a decline of about 3% in its market share for biscuits in France in the year following these events; pp. 341-342. See also Danone Rapport d'Activité 2004, p. 26. This section of Danone's annual report concerns the biscuit division, at the centre of the turmoil described in the case study.



*News Media Reports* take account of *STK Reports*<sup>17,18</sup>; conversely, *STK Reports* cite *News Media Reports* (Loop R5). The *Worker Resistance* may also directly impact the firm's *Market Share*<sup>19</sup> (Loop R6).

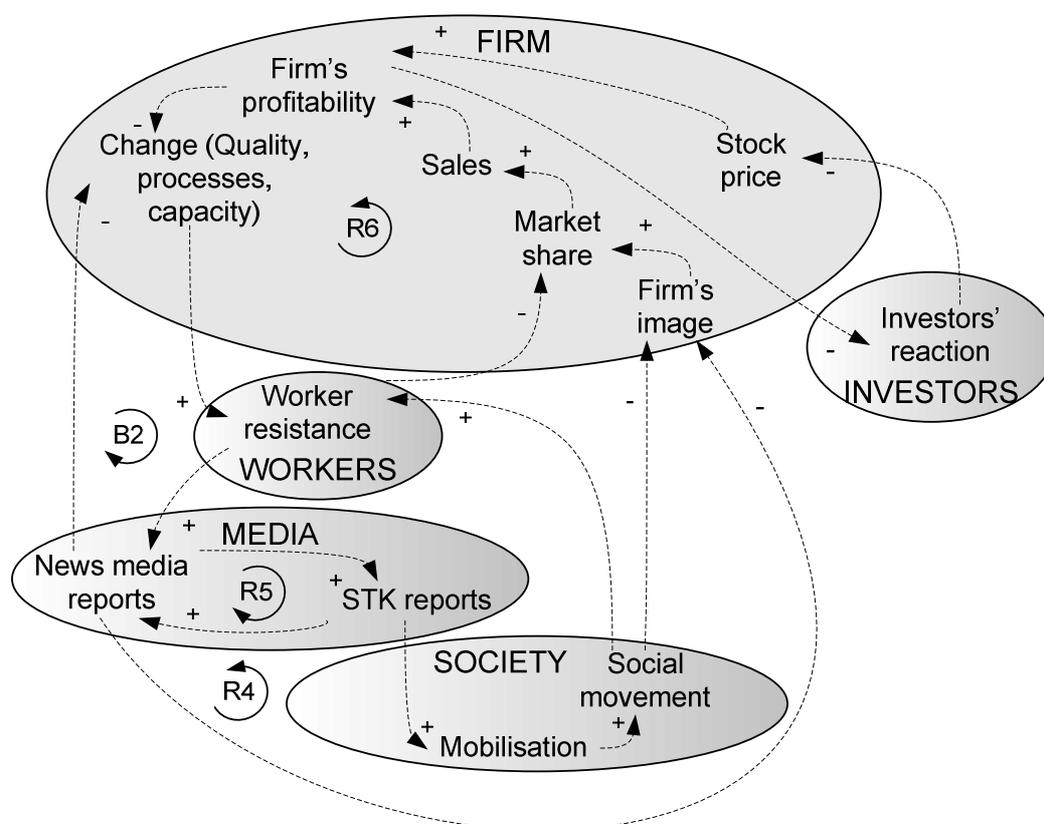


Figure 4: Interaction of the firm's profitability with the media

## E. Interaction of the firm's profitability with courts and regulators

*Mobilisation* becomes a greater risk for the firm when courts or regulators enter the game. Specifically, the *Mobilisation* can lead to *Judicial/Regulatory Action* either through retaliation by the firm's management against stakeholder media or activists<sup>20,21</sup> or on behalf of

<sup>17</sup> The daily newspaper *Libération* reprinted union tracts providing lists of Danone brands, and the ensemble of French newspapers closely reported the conflict between management and Internet-based adversaries. Likewise, protestor websites cited supportive and hostile news coverage of their actions; pp. 338-340.

<sup>18</sup> In particular, news media apparently followed the website of the Project on Government Oversight, [www.Pogo.org](http://www.Pogo.org), where activist Charles Hamel served on the board, and which published leaked BP internal documents. Articles based on this information in the *Financial Times* were subsequently reprinted on numerous environmentalist websites; p. 13.

<sup>19</sup> Danone reported diminished growth in all business sectors in the French market through the first half of 2001, during the most intense period of protest activity, and growth of its biscuit sector remained depressed for the following two years. This information passed largely unnoticed in the news media, but was noted by financial analysts. See "Danone: Une croissance sous tension", *Société de Bourse Wargny*, October 2001, and François Digard, "Danone.", *ING Barings*, 9 and 11 October and 16 November, 2001.

<sup>20</sup> See Note 7, citing Danone's attempts to sue its online critics.

<sup>21</sup> Following the announcement of "Beyond Petroleum," Greenpeace activists occupied a BP barge at the Northstar site in the Arctic to dramatise their claim that BP stood for "burning the planet." The occupiers were arrested and tried in Federal court; p. 7.

stakeholders who believe their interests are affected by the trigger event.<sup>22</sup> Such *Judicial/Regulatory Action* can further hurt the *Firm's Image*<sup>23,24</sup> (shown in Loops R7, R8, B3, Figure 5).

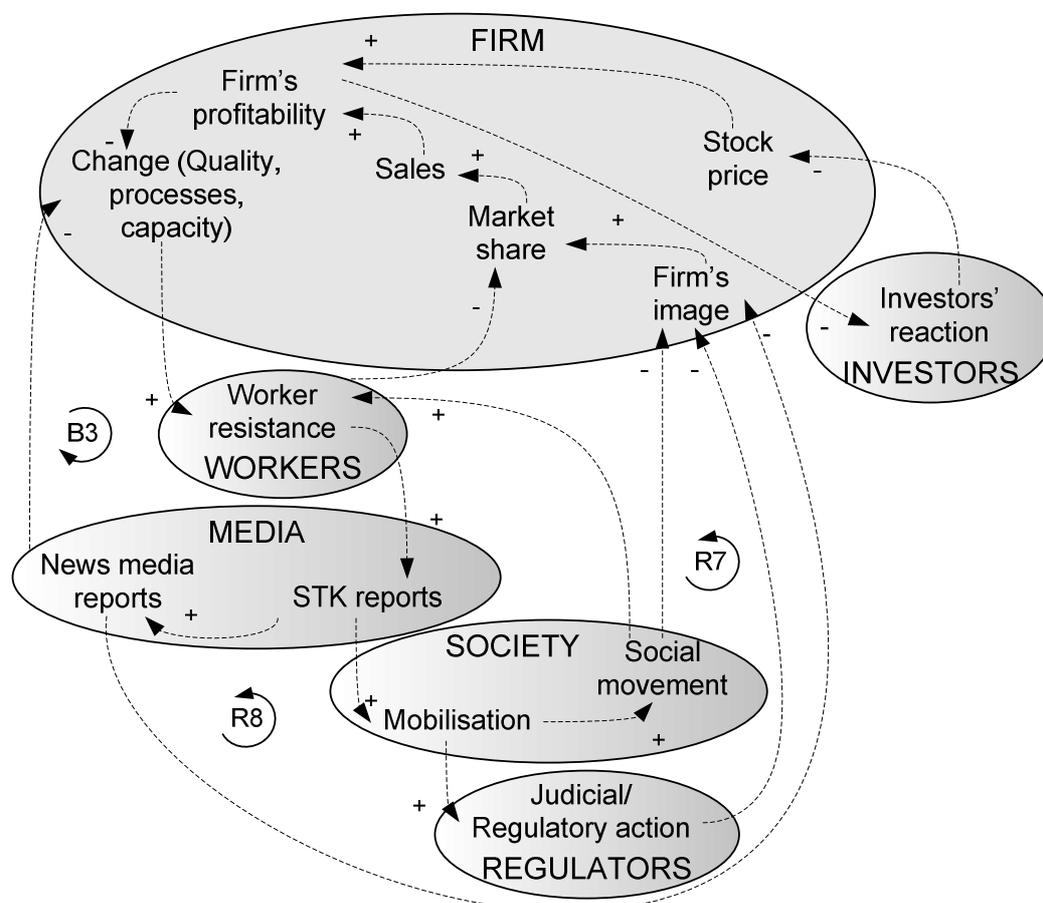


Figure 5: Interaction of the firm's profitability with courts and regulators

## F. Interaction of the media with courts and regulators

*Judicial/Regulatory Action* can also further encourage the *Social Movement*<sup>25,26</sup>. The positive (that is, destabilizing) Loops R9 and R10 are represented in Figure 6. *Judicial/Regulatory*

<sup>22</sup> Following the initial leak of Danone's restructuring plans, the French government, at the time on the Left, threatened legislation to ban firings at profitable firms; p. 337.

<sup>23</sup> Danone was accused of censorship for attempting to silence online critics; pp. 339-340. Ultimately, the firm lost a measure of control over its own logo, when the courts ruled that its adversaries had a right to parody the logo.

<sup>24</sup> In the incident cited in Note 21, Greenpeace achieved very wide publicity hostile to BP, which was sustained by follow-up news coverage of charges against the activists; p. 8.

<sup>25</sup> A striking example from the Danone case occurred when a Trotskyite elected official had himself named a union representative so that he could legally militate against the firm inside its plant at Evry; p. 337.

<sup>26</sup> The expectation of Prudhoe Bay workers and their stakeholder allies that regulatory action would work in their favour was demonstrated by their avid attempts to persuade regulators in Alaska to intervene against the firm. These attempts were largely successful: Repeated accusations of safety violations at Prudhoe Bay attracted increasingly strict regulatory attention, which included the publicly stated threat that BP would be relieved of responsibility for operating the field; p. 17.



The firm's management foresees that the *Worker Resistance to Change*, reinforced by *STK Reports*, *News Media Reports* and *Judicial/Regulatory Action* will eventually affect its customers. Therefore, management seeks to reduce risks to the *Firm's Image* by providing *Indemnities* to the workers<sup>33,34</sup> to reduce their resistance (Loops B5-B11).

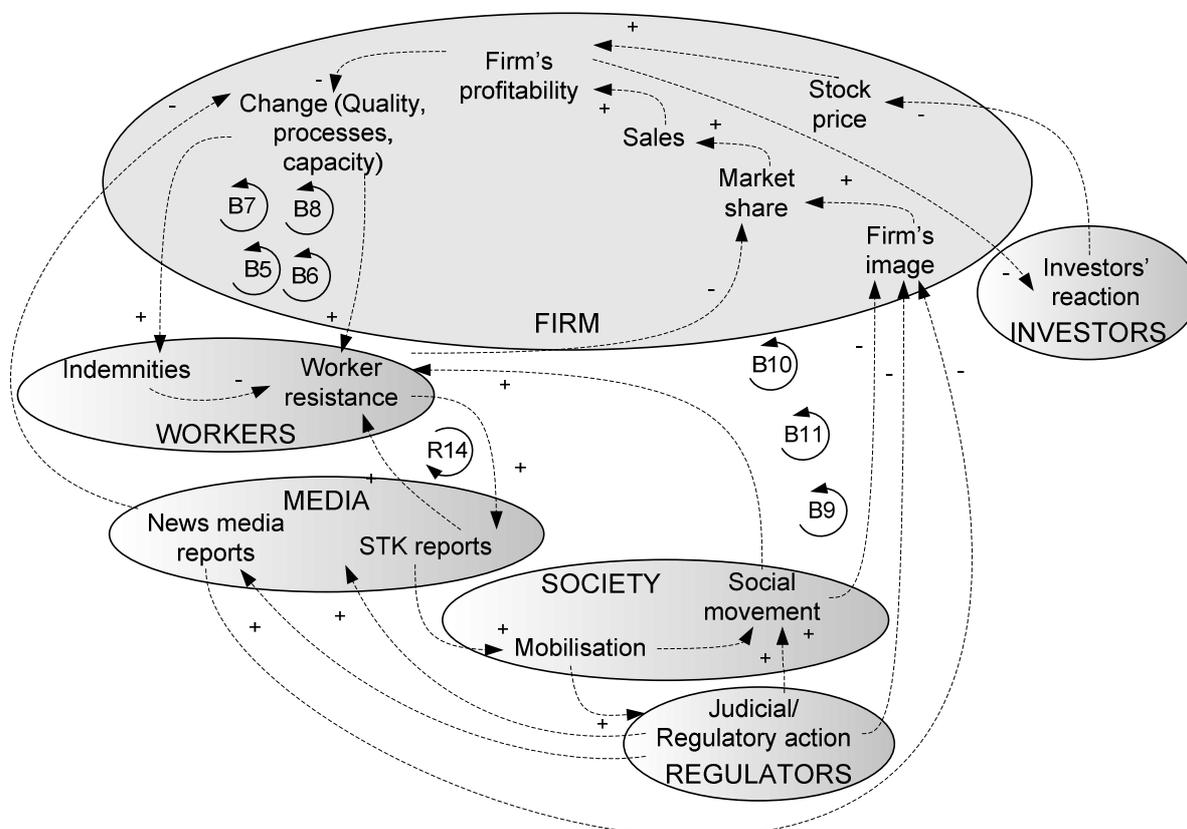


Figure 7: Interaction of media with worker resistance

## H. Interaction of the firm's market share with investors' reaction

A decrease in the firm's *Market Share* due to *STK Reports*, *Judicial/Regulatory Action*, the *Worker Resistance* and *News Media Reports* leads to a negative reaction from *Investors* that lowers the *Stock Price* and eventually the *Firm's Profitability* (Loops R15-R23, Figure 8). However, the *Indemnities* may reduce tensions and lead to improvements in the firm's *Market*

<sup>31</sup> The adversarial website [jebocottedanone.com](http://jebocottedanone.com) adopted as its slogan "Human Beings Are Not Yogurts!", and demanded reinstatement of downsized workers of Danone even before any downsizing had occurred; p. 339.

<sup>32</sup> Charles Hamel, the self-described BP workers' advocate, was cited in 1070 pages found via a Google search using the terms "anwr drilling hamel" in September 2009; p. 14. An example gives the general flavour and tone: see Jason Leopold, "It Could be Worse than Exxon Valdez: Drilling and Spilling in the ANWR", <http://www.counterpunch.org/leopold04202005.html>, published 21 April 2005, accessed on 10 September 2009.

<sup>33</sup> In March 2001, Danone proposed a series of "social" measures for restructuring that went far beyond compliance with those demanded by French law; p. 337.

<sup>34</sup> In the sense we are using the term, "indemnities" applies to management efforts to address worker concerns caused or perceived to be caused by change. In that sense, the announcement by BP management that "safety will be our number-one priority" at the Prudhoe Bay field in January 2003 represented such an indemnity; p. 15.

*Share* and the *Firm's Profitability*, leading to a positive reaction from *Investors* and increasing the *Stock Price*<sup>35,36</sup> (Loops B12-B20, Figure 8).

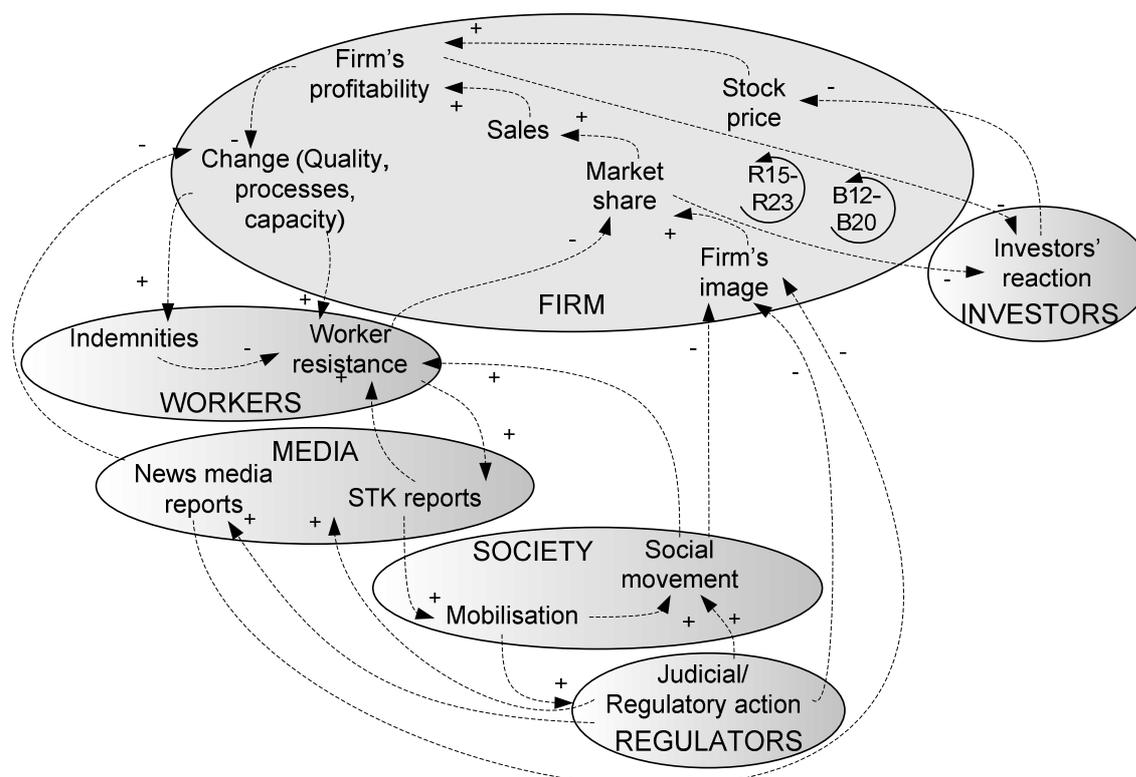


Figure 8: Interaction of the firm's market share with investors' reaction

## I. Interaction of the media with investors' reaction

A negative reaction from investors (*Investors' Reaction*) attracts *News Media Reports*, further reinforcing the *Investors' Reaction*<sup>37</sup> (Loops R24-R30, Figure 9), and also attracts the attention of stakeholder media (*STK Reports*)<sup>38,39</sup>, which further deflect the *Investors' Reaction* (Loops R31-R37, Figure 9).

<sup>35</sup> Danone stock sold for over 76 euros per share at the beginning of February 2001, when management's apparent determination to pursue restructuring was welcomed by analysts. Hostile worker and political reaction led to a brief decline, and then a rise when Danone's humane restructuring measures were announced at the end of March. Worker determination remained, however, and two weeks after the boycott began in April, Danone's stock fell to under 67 euros per share. Management redressed the situation at the end of May by declaring that it would continue to act humanely toward workers, and that the boycott had failed; pp. 340, 342. At this moment, the perceptions created by management did not entirely reflect reality, as we shall see later in this article. However, those perceptions did create the effects predicted by our model.

<sup>36</sup> The intensity of adversarial activity around Prudhoe Bay coincided with slight declines in BP's stock at the end of 2002, followed by a brief upward spike at the beginning of 2003 (when the firm announced that "safety will be our number one priority" at the field), and then a slight second decline; p. 18.

<sup>37</sup> In January 2003, a leading UK ethical investment fund made news by announcing that it was selling its BP holdings because of safety and environmental incidents in Alaska. It was soon followed by the World Wildlife Fund, which likewise announced that it was selling its BP holdings for the same reasons, and likewise became news; p. 16.

<sup>38</sup> The key stakeholder media in the Danone case, aside from the Internet-based protestors previously mentioned, were financial analysts. In mid-summer 2001, a consensus existed among analysts that Danone management had successfully weathered the boycott. That consensus flagged at summer's end, when first half results showed discernible effects that management had previously passed over, and the stock began to decline. By early winter, a new consensus among analysts took shape as they warned investors away from the stock; p. 341.

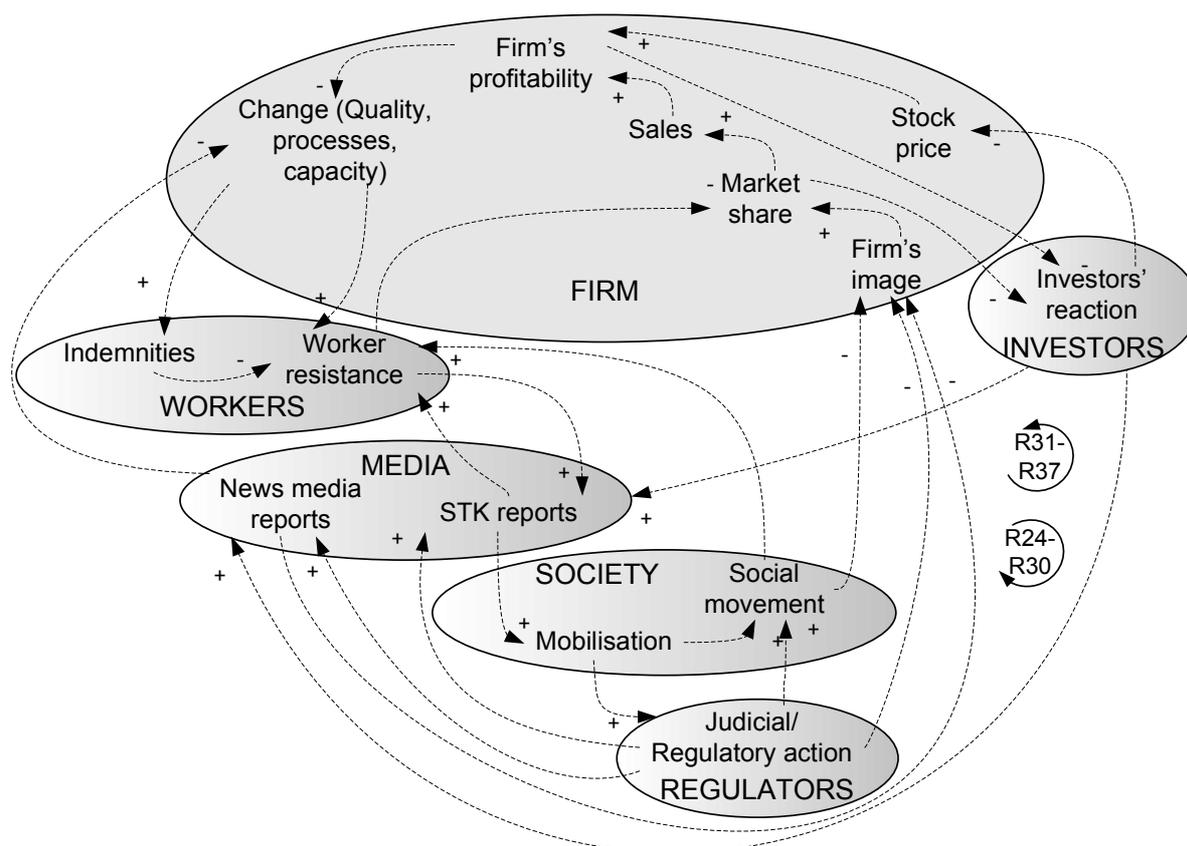


Figure 9: Interaction of the media with investors' reaction

## J. Interaction of the firm's profitability with "rumours"

The firm's management, in order to prevent a negative *Investors' Reaction* that will lead to the reduction of the value of the *Stock Price*, denies the loss in sales, market share or quality<sup>40</sup> (Loop B21, Figure 10). However, even if the firm's management succeeds initially in countering the reduction of the value of the *Stock Price* by denying a loss in sales or in quality (Loop B21), eventually it corrects the *Information*, leading to a negative *Investors' Reaction*<sup>41</sup> (Loop R38). The interaction of the firm's *Stock price* with the rumours' correctness is represented in Figure 10.

<sup>39</sup> This dynamic figured explicitly in activist strategies to counter BP. Greenpeace not only reported on investor conflicts with BP management over environmental and safety issues, but actively promoted such conflicts by organising shareholder protests. See note 36 and p. 10.

<sup>40</sup> At Danone's General Shareholders Assembly on May 29, 2001, management announced that the boycott had had no effect on group sales worldwide, omitting mention of its effects in France, and declaring that "the storm is over."; p. 340.

<sup>41</sup> We note that this dynamic principally concerns publicly traded firms, which are bound by law to provide correct information to investors. In the case of Danone, the provision of successive quarterly results demonstrating the ongoing effects of the boycott and social movement and countering management assurances preceded a sharp decline in Danone's share price, which did not reach its trough until Q1 2003; pp. 340-342. BP, in contrast, did not deny the existence of safety issues at Prudhoe Bay (p. 13), and declines in its share price following successive incidents were minor and transient (p. 18).

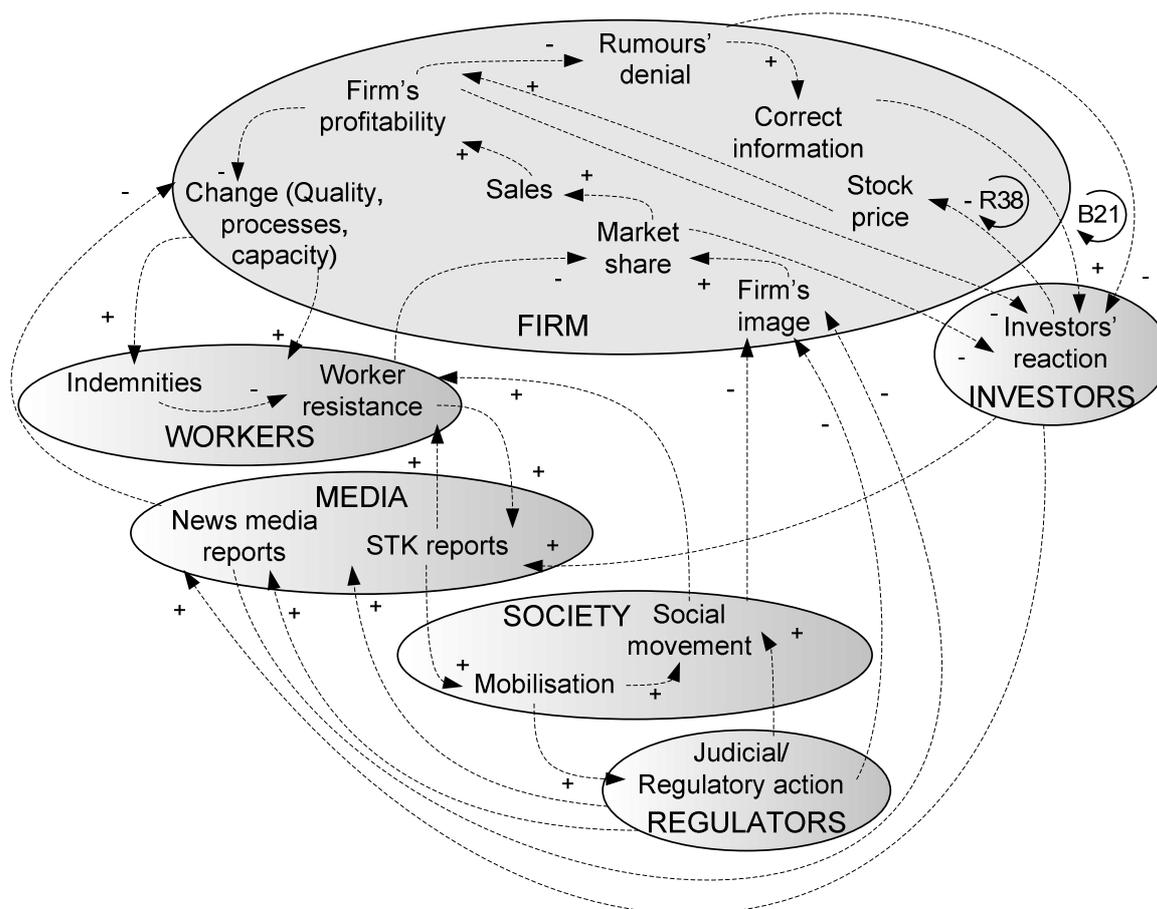


Figure 10: Interaction of the firm's profitability with "rumours"

## K. Parallel events

Exogenous events that occur in parallel with the *Change* in the system can trigger *News Media Reports* as well as *STK Reports* that impact on the firm. Such events may thereby obscure or override management attempts to resolve existing conflicts that affect the firm's image<sup>42,43</sup>. They are shown below in Figure 11, which represents a generalised model of the two cases under study. In Appendix 1, we present the feedbacks of this generalised model.

<sup>42</sup> In March 2001, the announcement of an exemplary set of compensatory measures for Danone workers, which management had expected would end the crisis, was overshadowed by the sudden closing of a Marks & Spencer store in Paris and the firing of its staff. Public outrage confounded the two cases, and the boycott of the Danone began immediately thereafter; p. 338.

<sup>43</sup> In the spring of 2005, an explosion at BP's Texas City refinery killed 15 men and unleashed a firestorm of hostile public, judiciary, regulatory and legislative attention on the firm. BP's response to the events and criticism was regarded by many observers as appropriate and highly responsible; nonetheless, a side effect of the disaster was to legitimate critics of the firm's operations in Prudhoe Bay, where a subsequent oil spill unleashed a similar storm, overwhelming any positive impacts of the firm's efforts to make safety "our number one priority"; pp. 18-19.





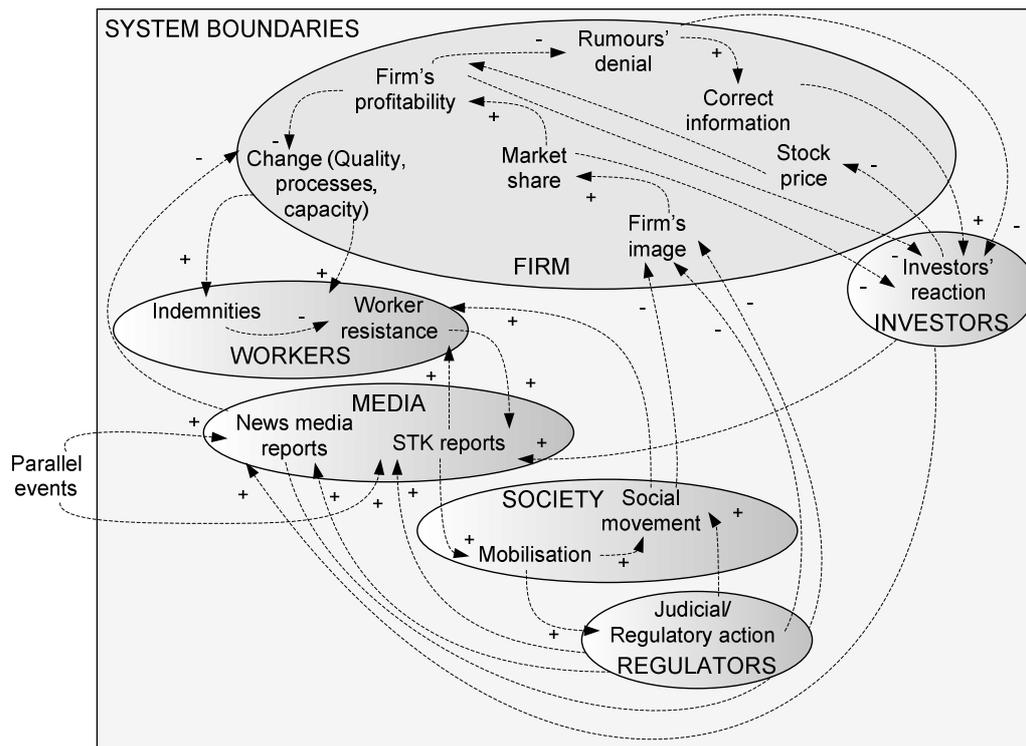


Figure 13: Causal-loop diagram of the BP case

## IV. Discussion

We do not contend that the models presented above fully capture the interactions among all stakeholders present in our cases. Nor do we contend that they will capture all the dynamics that may emerge from other cases with different features: For example, Tsuchiya (2003, p. 2) offers a slightly different SD model derived from his six cases, in which explicit ethical concerns and whistle blowers play a larger role than in our model, reflecting his case studies and their cultural context. We also recognise that the fit between our data and our models from a retrospective point of view is not surprising. That said, we believe that our procedure represents a fair attempt to capture the information dynamics of some complex events over time. In particular, the models presented above demonstrate that interactions between news media, stakeholder media, investors and employees may have delayed but substantial effects that impact a firm's image, market share, profitability and market capitalisation. They also demonstrate that the interaction among the components of the system, rather than the direct influence of any given component, probably explains the order of magnitude of these impacts. Different actors within the system do not move or speak in isolation; they constitute a network, and actions at numerous points in the network eventually feed back to other points. This feedback may far surpass an initial stimulus in its eventual effects. These insights support the argument of Pruyt and Kwakkel (2007) that system dynamics can "positively contribute" to ethics by helping "to model, simulate, and evaluate what *ought* to be done in case of important complex issues", and "to take different perspectives (also different ethical perspectives) and their consequences on different dimensions over time into account." In short, mapping system dynamics of similar situations to those faced by managers may enable better outcomes of their decisions in the long term.

Managers require feedback that provides insights into the relationships among important variables in a given project environment, particularly as the project evolves (Sengupta et al.

2008). One obvious implication of our findings is that communication strategies which neglect or dismiss the influence of actors on the basis of immediate responses may do nothing more than buy time – specifically, the time necessary for those actors to generate responses that feed back across the system. The cases at hand confirm that this time delay may be much shorter than organisational leaders might wish (Orlikowski and Yates, 2002); in particular, it may not be sufficient to correct the circumstances that mobilise adversaries. This is particularly true when phenomena that focalise opposition overlap (Roe 2005).

In other circumstances, the delay between two phenomena may be so long that it is more difficult for the management of a firm to identify the source of feedback (Sengupta et al. 2008). A narrow temporal perspective may lead to seeing certain phenomena as unrelated, while an appropriate temporal frame will indicate a strong relation. To solve this problem, the pertinent phenomena must be viewed as dynamic, rather than as static (Roe 2005); put another way, events must not be viewed as separate and self-terminating, but as a continuum with a long tail. It would be wise, as well, to recognise that exogenous events may feed into a system of initiative and response, conferring augmented influence on adversaries and critics. For example, the Danone protests were preceded by the closures of factories by other profitable enterprises in France; and BP's Arctic operations were surely viewed by adversaries through the lens of the lasting effects of the Exxon Valdez oil spill, which remained unresolved at the time of this case. Put another way, a firm is surely not responsible for what its competitors or actors in other industries may do, but it may nonetheless be affected by them in terms of stakeholder opinion. A firm-centric perspective cannot fully capture these effects, and further research is required to fully integrate them into models such as ours.

An unanswered question (which has been posed to us by organisational leaders) is: How can the influence of particular actors on the overall system be measured? Put another way, at which points in the system, and toward which actors, can leaders most effectively intervene? We cannot posit answers until we have undertaken the following three steps presented in our introductory section: Formulation of a simulation model with estimations of parameters and initial conditions; testing the model to verify its quality; and evaluating different policies or actions to see how their effects may impact the behaviour of the overall system. Specifically, the generalised model must be transferred from causal-loop diagrams to stock and flow diagrams. Mathematical equations must be written and the model must be validated using data from further case studies. Finally, simulations must be conducted in order to understand the behaviour of the system. Further scenario analysis may then reveal the actors who most influence the outcome of leadership decisions. However, and more importantly, it may also confirm that the system in and of itself generates effects that surpass the direct influence of given actors.

We are neither naïve nor unconcerned about certain potential uses of this work. In particular, we are aware that organisational leaders in various sectors seek to identify influential adversaries not in order to understand their claims and to engage in dialogue, but to silence them. To name two examples, ethical change agents like the journalists Anna Politkovskaya and Norbert Zongo were assassinated, and others too numerous to list here have been destroyed elsewhere. On a lesser order of magnitude, our work on the two cases above turned up questionable tactics of influence: For example, we observed the creation by one of BP's competitors, ExxonMobil, of a network of activists, discreetly subsidised with corporate funds, whose mission was to disrupt and counter environmental activists via news and stakeholder media as well as regulatory agencies, and in the process to also darken public

opinion of BP (Hunter et al. 2010, pp. 21-22). In other words, faced with a dynamic system contrary to its interests, ExxonMobil sought to create its own counter-system.

This initiative backfired, as other components of the system mitigated the firm's desired effects or exposed them to scrutiny. That may indicate that the power of any actor in a given system, as well as his or her security, is dependent on other actors in the system. An isolated element, whether inside an organisation or among its critics and adversaries, may not be entirely ineffective, but it is certainly more vulnerable. Similarly, research into the ability of investigative journalists to effect change has confirmed that the most effective reporters are those who construct coalitions among activists, authorities and institutions to support their findings (Protest et al. 1991). Such allies and adversaries may themselves be more or less responsible. But it appears that an essential vector of their utility and safety resides in strengthening the overall system within which they function, and in particular those components of the system which act to reinforce its ethical outcomes.

Appeals to the ethics of given actors, and in particular powerful ones, are notoriously ineffective. However, organisational leaders might well reflect more deeply on the risks entailed by appealing to unethical actors to counter the systemic influence of visible adversaries. Those risks go well beyond exposure and the resultant premature termination of a given operation, followed by more or less steep reputational, judicial or civil sanctions. They may also include increased resistance from adversaries within a given system, and that equates to diminished influence over time for the authors of a CSI initiative. Thus we posit that the exercise of unilateral power within a system like the one we have described may lead to lost power for its user, in the sense of influence over the longer-term outcomes of events. We cannot predict the extent or duration of that loss. We can affirm, on the basis of our data, that employees, stakeholders and investors do not simply do what they are told, and whether or not one or several of them falter or disappear, the system remains and reacts to disturbances.

Our work to date indicates that to establish durable influence among the actors present within a given system, organisational leaders must above all view themselves as part of the system. It is neither naïve nor falsely angelic to recognise that the success or failure of a given initiative depends largely on the extent to which that move is accepted by other actors within the system that surrounds and enfolds it. (Financial analysts may not often encounter union officials, but their actions and ideas follow parallel and sometimes identical pathways, and their feedback eventually enters the same loops.) The withholding of approval by key stakeholders translates very quickly into discernable effects, and those effects may be highly durable. Over time, the system prevails over even the most determined leaders, if its feedback negates their objectives.

Accepting this postulate may entail a shift in working methods for those charged with ensuring the success, vis-à-vis stakeholders, of organisational initiatives. Attention to the loops by which feedback transits and manifests itself involves more work than simply monitoring the news media, and broader analysis than considering each component of the system separately. In most organisations we know of, such analysis is confided to human resources or issues management, rather than to the strategy function, while communications is typically tasked with presenting decisions in the most positive form possible. Closer cooperation among these functions might result in better exchange of information concerning the different aspects of pertinent feedback loops, and hence in better decisions. In the case of initiatives with long-term horizons, neglecting these tasks will result in “predictable

surprises” (Bazerman and Watkins 2004) – that is, unwanted outcomes that might have been foreseen and avoided.

Despite its apparent complexity, our demonstration results in a straightforward conclusion: Wise leadership involves getting an entire system’s dynamics, and as much of the force of its feedback as possible, moving in the desired direction. If coalition with other components of the system proves impossible, it is a clear sign that the initial objectives may be flawed and might better be recast. Systems like the one we have described are not intrinsically or inevitably obstacles to the vision of leaders. Instead, these systems indicate what may be possible for leaders to achieve, and what is surely necessary for them to take into account. It is a grave mistake to view this circumstance only as a limitation. It is also a means, if correctly understood, to tap resources far beyond those available to any organisation. If incorrectly understood, it is a path to conflict with enemies who are legion, who may not be immediately visible, and who may strike in a distant time.

## References

- Baron, D. P., Diermeier, D. (2006). Strategic Activism and Nonmarket Strategy. *Journal of Economics and Management Strategy*, 16(3), 599-634.
- Bazerman, M. H., Watkins, M. D. (2004). *Predictable Surprises: The Disasters You Should Have Seen Coming*. Cambridge: Harvard Business School Press.
- Coombs, W. T. (2004). Impact of past crises on current crisis communication: Insights from situational crisis communication theory. *Journal of Business Communication*, 41(3), 265-289.
- Coyle, R. G. (1979). *Management system dynamics*. Wiley and Sons, New York.
- Coyle, R. G. (1996). *System dynamics modelling: A practical approach*. Chapman & Hall.
- Deephouse, D. L., Heugens, P. P. M. A. R. (2009). Linking Social Issues to Organizational Impact: The Role of Infomediaries and the Infomediary Process. *Journal of Business Ethics*, 86, 541-553.
- DeMacarty, P. (2009). Financial Returns of Corporate Social Responsibility, and the Moral Freedom and Responsibility of Business Leaders. *Business and Society Review*, 114(3), 393-433.
- Dickson, M. A., Eckman, M. (2008). Media Portrayal of Voluntary Public Reporting About Corporate Social Responsibility Performance: Does Coverage Encourage or Discourage Ethical Management? *Journal of Business Ethics*, 83, 725-743.
- Fassin, Y. (2009). The Stakeholder Model Refined. *Journal of Business Ethics*, 84, 113-135.
- Forrester, J. W. (1961). *Industrial dynamics*. MIT Press, Massachusetts.
- Franklin, D. (2008). Just good business: A special report on corporate social responsibility. *The Economist*, January, 19.
- Hunter, M. L., Le Menestrel, M., De Bettignies, H.-C. (2008). Beyond Control: Crisis strategies and stakeholder media in the Danone boycott of 2001. *Corporate Reputation Review*, 11(4), 335-350.
- Hunter, M. L., Van Wassenhove, L. N., Besiou, M. (2010). *Stakeholder Media: The Trojan Horse of Corporate Responsibility*. INSEAD Working Paper.
- Klein, J. G., Smith, N. C., John A. (2004). Why We Boycott: Consumer Motivations for Boycott Participation. *Journal of Marketing*, 68, 92-109.
- Maignan, I., Ferrell, O. C. (2001). Antecedents and benefits of corporate citizenship: an investigation of French businesses. *Journal of Business Research*, 51(1), 37-51.
- Margolis, J., Elfenbain, H., Walsh, J. (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working paper.

Mcguire, J. B., Sundgren, A., Schneeweis, T. (1988). Corporate Social Responsibility And Firm Financial Performance. *Academy Of Management Journal*, 31(4), 854-872.

Middlemiss, N. (2003). Authentic not cosmetic: CSR as brand enhancement. *Brand Management*, 10(4), 353-361.

Orlikowski, W. J., Yates, J. (2002). It's About Time: Temporal Structuring in Organizations. *Organization Science*, 13(6), 684-700.

Porritt, D. (2005). The Reputational Failure of Financial Success: The 'Bottom Line Backlash' Effect. *Corporate Reputation Review*, 8(3), 198-213.

Protest, D. L., Lomax-Cook, F., Doppelt, J. C., Ettema, J. S. (1991). *The Journalism of Outrage: Investigative Reporting and Agenda-Building in America*. New York: The Guilford Press.

Pruyt, E., Kwakkel, J. (2007). Combining System Dynamics and Ethics: Towards More Science? 25th International Conference of the System Dynamics Society, July 29 - August 2, Boston, U.S.A.

Roe, R. A. (2005). Studying time in organizational behavior. Working paper, Universiteit Maastricht.

Scherer, A.G., Palazzo, G. (2010), The New Political Role of Business in a Globalized World –A Review of a New Perspective on CSR and its Implications for the Firm, Governance, and Democracy. Unedited version as of March 9, 2010; forthcoming in *Journal of Management Studies*.

Sengupta, K., Abdel-Hamid, T. K., Van Wassenhove, L. N. (2008). The Experience Trap. *Harvard Business Review*, 86(2), 94-101.

Sterman, J. D. (1991). A skeptic's guide to computer models. In: Barney, G. O., Kreutzer, W. B., Garrett, M. J. (Eds.), *Managing a nation, the microcomputer software catalog*. Boulder: Westview Press.

Sterman, J. D. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. McGraw-Hill.

Tsuchiya, T. (2003). Corporate Business Ethics - Analysis and Leverage. 21st International Conference of the System Dynamics Society, July 20 - 24, New York City, New York, U.S.A.

Ulmer, R. R., Sellnow, T. L. (2000). Consistent questions of ambiguity in organizational crisis communication: Jack in the Box as a case study. *Journal of Business Ethics*, 25, 143-155.

Van Halderen, M.D. (2007). *Organizational Identity Expressiveness and Perception Management: Principles for expressing the organizational identity in order to manage external stakeholders' perceptions of a company*. Rotterdam: Erasmus Research Institute of

Management.

Vlachos, P. A., Tsamakos, A., Vrechopoulos, A. P., Avramidis, P. K. (2009). Corporate social responsibility: attributions, loyalty, and the mediating role of trust. *Journal of the Academy of Marketing Science*, 37, 170-180.

Werbane, P.H. (2002). Moral Imagination and Systems Thinking. *Journal of Business Ethics*, 38, 33-42.

### Appendix 1: Feedbacks of the generalised model

| Loops | Parameters   |
|-------|--|
| R1    | <i>Firms' Profitability → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B1    | <i>Firms' Profitability → Change (Quality, processes, capacity) → Firm's Cost → Firms' Profitability</i>   |
| R2    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| R3    | <i>Worker Resistance → STK Reports → Mobilisation → Social Movement → Worker Resistance</i>  |
| R4    | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B2    | <i>Change → Worker Resistance → News Media Reports → Change</i>  |
| R5    | <i>News Media Reports → STK Reports → News Media Reports</i>   |
| R6    | <i>Firms' Profitability → Change → Worker Resistance → Market Share → Sales → Firms' Profitability</i>   |
| R7    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>  |
| R8    | <i>Change → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability → Change</i>   |
| R9    | <i>Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance</i>   |
| R10   | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                |
| R11   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → STK Reports</i>   |
| R12   | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| R13   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports → STK Reports</i>  |
| R14   | <i>Worker Resistance → STK Reports → Worker Resistance</i>   |
| B3    | <i>Change → Worker Resistance → STK Reports → News Media Reports → Change</i>  |
| B4    | <i>News Media Reports → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports</i>  |
| B5    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B6    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B7    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                    |
| B8    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                  |
| B9    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |

|     | <i>Profitability</i>   |
|-----|--|
| B10 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                 |
| B11 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>               |
| R15 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R16 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>  |
| R17 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                      |
| R18 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R19 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R20 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                              |
| R21 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                   |
| R22 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| R23 | <i>Firms' Profitability → Change → Worker Resistance → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B12 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                                     |
| B13 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                          |
| B14 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>        |
| B15 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B16 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B17 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image →</i>  |

|     |  |
|-----|--|
|     | <i>Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B18 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                   |
| B19 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| B20 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R24 | <i>News Media Reports → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R25 | <i>News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>  |
| R26 | <i>News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R27 | <i>News Media Reports → STK Reports → Worker Resistance → Market Share → Investors' Reaction → News Media Reports</i>  |
| R28 | <i>News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance → Market Share → Investors' Reaction → News Media Reports</i>  |
| R29 | <i>News Media Reports → STK Reports → Mobilisation → Social Movement → Worker Resistance → Market Share → Investors' Reaction → News Media Reports</i>   |
| R30 | <i>News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R31 | <i>STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>  |
| R32 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| R33 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>  |
| R34 | <i>STK Reports → Mobilisation → Social Movement → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>   |
| R35 | <i>STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>  |
| R36 | <i>STK Reports → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>  |
| R37 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| B21 | <i>Firms' Profitability → Rumours' Denial → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R38 | <i>Firms' Profitability → Rumours' Denial → Correct Information → Investors' Reaction → Stock Price → Firms' Profitability</i>   |

## Appendix 2: Feedbacks of the Danone case

| Loops | Parameters   |
|-------|--|
| R1    | <i>Firms' Profitability → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B1    | <i>Firms' Profitability → Change (Quality, processes, capacity) → Firm's Cost → Firms' Profitability</i>   |
| R2    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| R3    | <i>Worker Resistance → STK Reports → Mobilisation → Social Movement → Worker Resistance</i>  |
| R4    | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| R5    | <i>News Media Reports → STK Reports → News Media Reports</i>   |
| R6    | <i>Firms' Profitability → Change → Worker Resistance → Market Share → Sales → Firms' Profitability</i>   |
| R7    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                    |
| R8    | <i>Change → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability → Change</i>   |
| R9    | <i>Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance</i>   |
| R10   | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                  |
| R11   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → STK Reports</i>   |
| R13   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports → STK Reports</i>  |
| R14   | <i>Worker Resistance → STK Reports → Worker Resistance</i>   |
| B4    | <i>News Media Reports → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports</i>  |
| B5    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                 |
| B6    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B7    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>                      |
| B8    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>    |
| B9    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B10   | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i> |
| B11   | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media</i>  |



|     |   |
|-----|---|
|     | <i>Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| B20 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                                    |
| R31 | <i>STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| R32 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>                                  |
| R33 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>                             |
| R34 | <i>STK Reports → Mobilisation → Social Movement → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>  |
| R35 | <i>STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| R36 | <i>STK Reports → Worker Resistance → Market Share → Investors' Reaction → STK Reports</i>   |
| R37 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>  |
| B21 | <i>Firms' Profitability → Rumours' Denial → Investors' Reaction → Stock Price → Firms' Profitability</i>  |
| R38 | <i>Firms' Profitability → Rumours' Denial → Correct Information → Investors' Reaction → Stock Price → Firms' Profitability</i>  |

### Appendix 3: Feedbacks of the BP Case

| Loops | Parameters   |
|-------|--|
| R1    | <i>Firms' Profitability → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B1    | <i>Firms' Profitability → Change (Quality, processes, capacity) → Firm's Cost → Firms' Profitability</i>   |
| R2    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| R3    | <i>Worker Resistance → STK Reports → Mobilisation → Social Movement → Worker Resistance</i>  |
| R4    | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B2    | <i>Change → Worker Resistance → News Media Reports → Change</i>  |
| B3    | <i>Change → Worker Resistance → STK Reports → News Media Reports → Change</i>  |
| B4    | <i>News Media Reports → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports</i>  |
| R5    | <i>News Media Reports → STK Reports → News Media Reports</i>   |
| R7    | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>  |
| R8    | <i>Change → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability → Change</i>   |
| R9    | <i>Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Worker Resistance</i>   |
| R10   | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                |
| R11   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → STK Reports</i>   |
| R12   | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| R13   | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → News Media Reports → STK Reports</i>  |
| R14   | <i>Worker Resistance → STK Reports → Worker Resistance</i>   |
| B5    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B6    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B7    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>                                    |
| B8    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>                  |
| B9    | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Sales → Firms' Profitability</i>   |
| B10   | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media</i>  |

|     |  |
|-----|--|
|     | <i>Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Sales → Firms' Profitability</i>  |
| B11 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Sales → Firms' Profitability</i>               |
| R15 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R16 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>  |
| R17 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                      |
| R18 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R19 | <i>Firms' Profitability → Change → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R20 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                              |
| R21 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                   |
| R22 | <i>Firms' Profitability → Change → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| B12 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                                     |
| B13 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                          |
| B14 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>        |
| B15 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B16 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| B17 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>                |
| B18 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i>     |

|     |  |
|-----|--|
| B19 | <i>Firms' Profitability → Change → Indemnities → Worker Resistance → News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → Stock Price → Firms' Profitability</i> |
| R24 | <i>News Media Reports → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R25 | <i>News Media Reports → STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>  |
| R26 | <i>News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R30 | <i>News Media Reports → STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → News Media Reports</i>   |
| R31 | <i>STK Reports → Mobilisation → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>  |
| R32 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Social Movement → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| R35 | <i>STK Reports → News Media Reports → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>  |
| R37 | <i>STK Reports → Mobilisation → Judicial/Regulatory Action → Firm's Image → Market Share → Investors' Reaction → STK Reports</i>   |
| B21 | <i>Firms' Profitability → Rumours' Denial → Investors' Reaction → Stock Price → Firms' Profitability</i>   |
| R38 | <i>Firms' Profitability → Rumours' Denial → Correct Information → Investors' Reaction → Stock Price → Firms' Profitability</i>   |

**Europe Campus**

**Boulevard de Constance**

**77305 Fontainebleau Cedex, France**

**Tel: +33 (0)1 60 72 40 00**

**Fax: +33 (0)1 60 74 55 00/01**

**Asia Campus**

**1 Ayer Rajah Avenue, Singapore 138676**

**Tel: +65 67 99 53 88**

**Fax: +65 67 99 53 99**

**[www.insead.edu](http://www.insead.edu)**

Printed by INSEAD

**INSEAD**



**The Business School  
for the World®**