BUSINESS AT RISK

Four studies on operational risk management

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EFI THE ECONOMIC RESEARCH INSTITUTE

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This volume is submitted as a doctor's thesis at the Stockholm School of Economics. The author has been entirely free to conduct and present his research in his own ways as an expression of his own ideas.

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Stockholm December 12, 2008

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TABLE OF CONTENT

The word *risk* derives from the early Italian *risicare*, which means to dare. In my opinion, the writing of a doctor's thesis is a true matter of daring, and without a doubt, there are substantial risks involved. As discussed in the present thesis, judgements on risk are frequently biased by various cognitive limitations, and I have to admit that my initial risk assessment regarding a Ph.D. project was quite inaccurate. But, despite the odds, here I am.

An achievement like this would not have been possible without the help, support, and encouragement provided by supervisors, colleagues, family, and friends. In one way or another you have all been 'risk mitigators,' and you deserve my deepest appreciation.

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I end with a note of appreciation to my family, to my mother Ann-Sophie, my sisters Anna, Caroline, and Louise, and my brother Philip, with respective families. Lastly, I would like to thank my father Kjell for never-ending support and encouragement of my work, and indeed throughout my life.

Based on empirical evidence, I know that the writing of a doctor's thesis is a prominent risk project. But, as stated early on by Michel de Montaigne, 'No noble thing can be done without risks.' A modern analogue might perhaps be 'No guts, no glory!' The book you hold in your hand is my glory; it is my ultimate reward.

Stockholm, December 11, 2008

Kristian Kallenberg

Background

In early times the future held great mystery. People perceived it to be controlled by the gods, and they were dominated by the forces of nature. Through history, these beliefs have been increasingly challenged due to a greater confidence in human reason and various scientific developments. During the Age of Enlightenment, developments in mathematics and probability theory furthered a more systematic approach to forecasting and to risk (Bernstein, 1996). Since then, the study of risk has attracted much attention, and many attempts have been made to explain risk – what it is, and how it affects human decision-making.

Risk is an illusive concept of great importance in everyday situations, as well as in more complex situations faced by individuals, societies, companies, organizations, and others. Be it business activities, military strategies, mountain climbing, or romance, risk is present, and the ability to anticipate what will happen in the future, as well as the ability to understand, measure, and manage risk, is important in many situations. The concept of risk is broad, and risk researchers are active in various fields such as business, finance, sociology, psychology, political science, ecology, and medicine. It is a vast multidisciplinary research field, and subsequently the theoretical and methodological approaches differ (Shrader-Frechette, 1991; Slovic, 2000).

Even though many of us have a rather intuitive perception of what risk is, it is not easily defined. Risk is generally conceived in a rather negative way, as something to avoid, something to mitigate, something to manage (Sjöberg, 2000). It is frequently conceptualized by measures of variance, size and nature of outcomes, probability of loss, failure to attain targets, ruin, or lack of information (Bettis and Thomas, 1990).

For the business organization, there are many risks that are important to consider and to manage. Risks stem from various sources, and consequently they have to be analyzed and managed differently. Notably, there is a difference in how risk is conceptualized within finance, as compared to other areas of business. The financial risk perspective normally conceptualizes risk as a prerequisite for gains and reward, whereas elsewhere, risk is frequently something inherently negative, something that might generate losses and is more intertwined with the

business process. The management of risk has always been an inherent part of business, but more formal, systematic approaches to risk management have evolved recently (King, 2001). This is especially true for the kind of risks that are discussed in this thesis, which are in focus in the study of *operational risk* and *operational risk management*. Such risk is better conceptualized using a generally accepted definition of risk as: 'The probability of an adverse event multiplied by the extent of the damage caused' (Pidgeon et al., 1992).

Operational risks are related to the way a company operates its business rather than the way it finances its business. They are said to be of increasing importance in the overall risk strategies of many companies (EIU, 2007a; King, 2001; Marshall, 2001; Smallman, 2000a; Ward, 2001). Examples of operational risks and of tasks for operational risk management might include business disruption and system failures, damage to physical assets, fraud, workplace safety, hazardous chemicals and other environmental risks, information technology risk, political risk, legal risk, compliance risk, corruption, reputation and PR risk.[1] In its broadest definition operational risk refers to any type of risk that a company faces that is neither financial (e.g. market/credit risk) nor defined as a traditional business risk (EIU, 2007a,b; Jorion, 2006).[2]

It is crucial to highlight that a clear-cut definition of operational risk is not always possible. As such, various business risks could arguably at times be characterized as having many of the features normally associated with operational risks. It is also essential to mention that despite the non-financial character of operational risks, as they frequently have economic impacts if realized, they might affect the financial risk exposure as well.

There are a number of factors that have motivated stakeholders such as governmental regulators, the insurance industry, and accounting and financial institutions to promote increased regulation and management control over (operational) risks in business organizations. Firstly, the development has been driven by several publicly exposed societal and business risk management failures and scandals (Gapper and Denton, 1996; Holton, 1998; Löfstedt, 2004; Löfstedt and Vogel, 2001; Slovic,

[1] Reputation risk is excluded in some definitions of operational risk.

[2] Business risk relates to risks that stem from businesss decisions, investment decisions, product development choices, marketing strategies, strategic choices, and the business environment. As opposed to the operational risks they are normally assumed willingly to create a competitive advantage and add to shareholder value (Jorion, 2006, p 517).

2000). The recent financial crisis must be mentioned here. At the time of the completion of this dissertation the world is facing the most severe financial crisis ever experienced. Even though this crisis is referred to as a financial crisis, it is obvious that it has emerged in part due to poor operational risk management. In Sweden, Carnegie, the beneficiated investment bank, serves as an example. Besides obvious macroeconomic and financial risks, the Carnegie collapse was due to erroneous decisions, short-term profit incentives, poor business ethics, and lack of internal control over operations (The Swedish Financial Supervisory Authority, 2008; Hedelius, 2008).[3] Secondly, the emergence of 'new' risks, such as various information technology risks or the increased media monitoring of business, are said to have promoted operational risk awareness (Anderson, 1999; EIU, 2007a,b,c; Jüttner, 2005, Ward, 2001). Thirdly, the increased focus on environmental issues has been mentioned as a reason for operational risk management activities (e.g. Accorsi et al., 1999; Anderson, 2006; Sullivan and Sylvester, 2006; Ljungdahl, 2008). These factors, which will be elaborated upon later, motivate the recent interest in operational risk management and more formalized risk management approaches to companies' overall risk exposures.

As a consequence, various economic incentives for a pro-active operational risk management have emerged. There are indicators that companies that engage in operational risk management activities outperform their competitors in avoiding unexpected losses by improving operational processes, more efficient use of capital, and more accurate compliance with regulations (e.g. Gates and Hexter, 2005; King, 2001). A successful management of operational risk is assumed to reduce the overall risk exposure of a company, create competitive advantages vis-à-vis competitors, increase profits, and consequently increase stakeholder satisfaction (King, 2001).

Certainly various operational risks have been managed by business in the past and have been of vast interest for researchers,[4] for example regarding occupational risks (Johannesson et al., 1999; Honkasalo, 2000; Sjöberg, 2007), chemical and other environmental risks (See study III; Johannesson et al., 1999; Karlsson, 2006; Löfstedt, 2003a), business resilience, process risk, operational safety management, and continuity planning (Davis, 2005; Frost et al., 2001; Holmberg et al., 1994;

[3] Carnegie was expropriated by the Swedish government (i.e *Riksgälden*) on November 10, 2008.

[4] In Sweden, risk research with more societal focus, but with some relevance for business operational risk management is e.g. conducted at CEFOS (University of Gothenburg), LUCRAM/MTOR (Lund University), and Center for Risk Research (previously at the Stockholm School of Economics).

Kirchsteiger, 2005; Palm, 2003; Jüttner, 2005), or regarding operational risks for financial institutions (Allen et al., 2004, Hussain, 2000; Jorion, 2006; Marshall, 2001; Neville, 2005; Wahlström, 2006;).

However, as a formalized strategic activity, with 'independent' business functions/departments, operational risk management, and more integrated approaches to overall risk exposure, is believed to be in its infancy. It has been stated that companies frequently deal with operational risk issues as they occur, often following a crisis or catastrophic event. Despite the recent interest in operational risk management, it is argued that there is a need for improvement in the quality (as regards tools and formal processes to handle operational risk) and scope (e.g. the identification of what risks to focus on) of operational risk management (Beaumont, 2007; Davis, 2005; Elliott et al., 2000; King, 2001; Hussain, 2000; Ward, 2001).

Purpose of the thesis

The overall purpose of the thesis is to add knowledge to the field of operational risk management by addressing the following broad research questions:

- How have operational risk management and more integrated risk management approaches evolved in Sweden? (Studies I, II, and IV)
- What stakeholders and contextual factors are important in explaining this development? (Studies I, II, III, and IV)
- What factors have influenced operational risk management strategies and what are their impacts? (Studies I, II, III and IV)
- How is operational risk management organized in Swedish industry? (Study II)
- What consequences may result from poor operational risk management? (Study I)
- What are the challenges with operational risk management? (Studies I, II, III, and IV)

The empirical part of the thesis is based on four studies. These studies deal with different but interrelated topics with relevance for operational risk management. The aims of the studies are:

Study I: The aim is to explore how poor management of operational risk and poor risk communication strategies may relate to share price developments. Factors such as trust, risk perception, media, judicial systems, and the amplification and attenuation of risk are discussed.

Study II: The aims are to explore how operational risk management has evolved in Swedish industry, to investigate and analyze how operational risk management is organized, to study the impact of stakeholders and contextual factors, and to examine various perceived problems related to the implementation of operational risk management. Issues relating to integrated approaches to risk management (as proposed in enterprise risk management, ERM) are discussed.

Study III: The aim is to explore Swedish industry's opinions in regard to items related to chemical risk assessment and regulation. Stakeholders and various factors perceived to have affected the risk management strategies are discussed.

Study IV: The aim is to explore employee perceptions of and attitudes to corporate responsibility (CR). The study investigates employee perceptions of CR importance, perceived firms' CR success, as well as various perceived reasons for firms' CR activities. Moreover, the study aims to discern if external ratings of CR are satisfactory proxies for actual CR success, as perceived by the employees.

The studies are presented in more depth in section five.

Research approach and limitations

This thesis applies a broad research approach. This is partly due to the characteristics and complexity of risk research. It has been argued that risk research in general, and operational risk management in particular, benefit from more inclusive, multi-disciplinary and multi-methodological research approaches (CAS, 2003; EIU, 2007; Gates and Hexter, 2005; Slovic, 2000; Smallman, 2000).

This thesis deals with operational risk that relates to three areas of risk research. Firstly, the thesis applies a business perspective (Studies I, II, III, and IV). As such, the management of risk is related to corporate goals, strategic considerations, profits, reputation, brand value, corporate responsibility, and more. Secondly, the thesis borrows from risk research, with psychological and sociological perspectives relating to risk perceptions, risk communication, trust, and amplification and attenuation of risk (Studies I, II, and III). Thirdly, the thesis focuses on risk research related to public policy. Regulative approaches to risk analysis as well as socio-political issues and consequences of risk analysis are discussed (Studies I, II, III, and IV).

The studies rely on both qualitative and quantitative methods of independent data collection and analysis. Thus, the studies are based on different sets of data. Study I is a case study based on a media content analysis, financial data analysis, and an interview. Study II applies a qualitative approach based on in-depth interviews. Study III is based on questionnaires as well as in-depth interviews, and Study IV builds on a collection of questionnaires.

Admittedly, operational risk management can be investigated using several approaches. Operational risk management is of importance for most business activities, and subsequently researchers with various interests in the business organization have conducted research into diverse aspects of operational risk management. From a financial perspective, operational risk and risk management are believed to benefit from a quantitative (value-at-risk) approach, while other areas accentuate a greater acceptance for more qualitative approaches. For example, the management of environmental risks or occupational risk exposure normally presupposes a broader and more qualitative approach than stipulated in financial literature on operational risk management (CAS, 2003; Jorion, 2006; King, 2001).

As in all research endeavors, it is difficult to consider all approaches in investigating a topic. This thesis is no different in that sense. I apply a broad definition of what constitutes operational risk, and such breadth also makes research complex. Of course a definition as broad as this may be criticized by some, but it is endorsed by others (Jorion, 2006, King, 2001; Smallman, 2000a). Overall, the chosen research approach implicates some possible limitations of the thesis.

Firstly, I discuss *some* operational risks and *some* aspects of operational risk management, not all. Thus it may be difficult to generalize the results to operational risk management in all settings. Notably, the thesis is

hardly aimed at business continuity planning, disaster recovery, and more technical/engineering approaches to manage risk. Clearly, operational risk management relating to these business activities have attracted much attention and also spurred the development.

Secondly, the investigated companies in the studies are Swedish and therefore the results might not be generalizable for research into operational risk management in other countries.

Thirdly, with regard to the discussions on stakeholders, an objection to the studies might be that they are based on primary data from the investigated companies, rather than from the stakeholders per se (Study III is an exception). If I had also interviewed various stakeholders, a somewhat different picture might possibly have appeared.

Fourthly, it could be argued that the overall scope of the thesis and the character of the broad research questions have implied a rather descriptive approach to the topic. However, as regards the studies, they also have normative implications for how operational risk might be managed by the industry.

Fifthly, the scope of the thesis does not include various economic calculations of risk, such as cost-benefit analysis. Rather, the scope is organizational, and the thesis focuses on general directions, current trends, stakeholder considerations, and challenges with operational risk management.

Outline of the thesis

The content of the present thesis is organized into five parts. The first part is the introductory chapter, which is then followed by four empirical studies (I, II, III, and IV). The introductory chapter consists of six sections, of which the first sets the stage for this thesis. The next section is a literature review of the nature of risk, the history of risk research, and the management of risk. This section gives a somewhat general and societal orientation of the topic. The third section is directed at risk management with more specific interest for business. It starts with a brief outline of how risk is frequently conceptualized in business. Then it treats operational risk management, and the concept of enterprise risk management. The fourth section relates the development of operational risk management to various corporate responsibilities. The fifth section summarizes the four empirical studies, and finally, the sixth section presents some general findings.

A glimpse of history

The developments toward an increased understanding of risk and risk management have to a great extent been directed by real-world problems in various societal and business settings. Such real-world problems have incentivized both practitioners and scholars to engage in risk research with pragmatic, rather than purely theoretical, approaches to risk and risk management (Sjöberg, 1992; Viklund, 2003).

It was not until the seventeenth-eighteenth century, during the Age of Enlightenment that the study of risk developed into a structured and scientific activity, and it has been stated that almost all the tools we use today in risk management and in the analysis of decisions and choice stem from development during that period. Building on empirical observations of human decision-making and the logic of mathematics, scientists such as Blaise Pascal, Pierre de Fermat, and Daniel and Jacob Bernouilli brought important findings to the theories of probability and of the mathematical dimension of risk (Bernstein, 1996). Moving beyond merely theoretical aspects of probability, gambling, vast scientific developments, and the rise of trade with colonies motivated more practical applications of probability. As the societies developed, probability surveys were used more and more to estimate life expectancy, mortality rates, causes of death, births, etc. (Bernstein, 1996).

For business, it was the emerging need for insurance that motivated more sound judgments of risk. Insurance activities developed hand in hand with the expansion of international trade and the emergence of stock exchanges (Bernstein, 1996). Starting off as a coffeehouse host, Edward Lloyd initiated 'Lloyd's list' in 1696. The list held information on trading ships' arrivals and departures, on conditions abroad, and at sea. Lloyd's list was the seed for the most famous insurance company in the world. During this period, increasingly, businessmen had to take into account factors such as consumer needs and pricing strategies. Thus, as the business environment became more complex, the need for buying insurance increased (Bernstein, 1996).

Despite its link with mathematics, probability has long carried a double meaning. On the one hand the link to the real world, to what we know, is emphasized, and on the other hand our perception and opinion of this real world are emphasized. It has been argued that the roots of subjective

interpretations of probability may be traced to the empiricism of English philosopher/economist David Hume (Holton, 2004), and to scientists such as the Swiss mathematician Daniel Bernouilli (Bernstein, 1996). Bernouilli (1738/1954) stressed the double feature of risk and put forth the argument that 'gut feelings rule measurement.' He recognized that while the role of facts is to provide a single answer (the same for everyone), the subjective process produces as many answers as there are human beings (Bernstein, 1996). This inherent aspect of risk highlights the persistent tension between objective and subjective approaches to the study and understanding of risk. As will be discussed with regard to risk perceptions and risk communication, it has been focused on in much subsequent research (e.g. Fischhoff et al., 1978; 1981; Slovic, 1987; 2000; Tversky and Kahneman, 1974).

In the 1920s, the American economist Frank Knight provided a famous definition of risk, as well as arguments on probabilities (Slovic, 2000). Even though Knight was a strong proponent of objectivist interpretations of probabilities, he recognized the existence of subjective interpretations of probabilities. Knight distinguished three types of probability situations (Knight, 1921, p 224):

- *A priori probabilities*. Inducted from experience, such as in the throw of the dice.
- *Statistical probabilities*. Empirical evaluation of homogenous data.
- E*stimates*. Knight argued that no satisfactory discussion can be made of estimates since they are 'liable to err'. He distinguished them from the two types of probabilities.

Knight stressed that the judgment of probabilities is a matter of gradation, where the final result is often an "*estimate*" of the probable outcome of any proposed course of actions (Knight, 1921). He stressed that such *estimates*, made in the absence of *a priori probabilities* or *homogeneity* (statistical probabilities), are the basis for most business decisions.

> Business decisions deal with situations which are far too unique, generally speaking, for any sort of statistical tabulation to have any value for guidance (Knight, p 231).

Risk management

Resources (whether monetary or other) are finite, and therefore risk management is frequently a matter of prioritizing of scarce resources. Risk management is to a great extent a matter of making trade-offs and implicit or explicit cost benefit judgments/analysis. However, as stressed above, the management of risk is also frequently directed by 'gut feelings', and subjectivity. This is true for individuals, business organizations, and for society at large. Risk management is a complex task, and as will be shown in the following there are a number of aspects that have to be considered.

Risk management and society

The modern study of risk started in the 1970s as a response to public concerns of risk relating to nuclear power, pesticides, and technological hazards (e.g. Fischhoff et al., 1978; Slovic, 1987, 2000). The focus was initially mostly societal even though there were implications for business as well. A paper by Starr (1969) is frequently mentioned as the starting point for risk research with vast importance for society, policy-making, and the study of risk perceptions (Sjöberg, 2003; Slovic 2000). As perceptions of risks tend to affect the outcomes of various societal and political goals, the importance of risk perceptions is accentuated for the understanding and the management of risk in many contexts (Kasperson et al., 1988; Slovic, 1987). Starr (1969) developed a method for weighing technological risks against benefits to answer the question of 'How safe is safe enough?' The work of Starr guided much of the research that followed, such as the 'psychometric paradigm' (discussed in the next paragraph) by Fischhoff, Slovic, and colleagues (Fischhoff et al.,1978, 1984; Slovic, 2000).

The early concerns for risks relating to nuclear power in the 1970s were succeeded by a significant number of risk controversies in the decades to follow. It has been frequently argued that these risks have been mismanaged by society (Löfstedt, 2005). In Europe many stakeholders such as the EU institutions, EU member states, industry, and various interest groups (e.g. non-governmental organizations) have been involved in these controversies. As a consequence, broad discussions on preferable approaches to managing risk have emerged (see Study III). Examples of such cases include Mad Cow Disease (BSE), benzene in Perrier water (Wiener, 2006), hormones in beef (Vogel, 2002; Van Asselt and Vos, 2006), genetically modified organisms (Löfstedt, 2004; Lynch and Vogel,

2000; Tait, 2001; Marchant, 2001), toxic substances such as phthalates (Wiener and Rogers, 2002), and electromagnetic fields (Balzano and Sheppard, 2002; Kheifets et al., 2001; Wiedemann et al., 2006). In the aftermath of 9/11 in 2001, the world faces new risks, and there seems to be convincing evidence that we are facing new environ-mental risks due to climate change (EIU, 2007a,b,c; Sjöberg, 2005: Stern, 2006).

These controversies have furthered societal and academic interest for risk research and risk management, notably regarding risk regulation, risk communication, and risk perceptions, issues which are dealt with below and in Studies I, II and III.

Risk perceptions

Controversies relating to risk and risk management are often due to people's different perceptions of risk, and to what could be characterized as irrational reactions to risk (Kasperson et al., 1988). Slovic (1987, p 280) stressed that 'the majority of citizens rely on intuitive risk judgments, typically called 'risk perceptions.'' Studies on risk perception move beyond the technocratic conceptualization of risk as merely a product of probability and magnitude of consequences, to stress that aspects such as voluntariness, familiarity with risk, and catastrophic potential shape risk responses (Kasperson et al., 1988; Slovic et al., 1982). Research into risk perception started with a psychological and individual focus (notably regarding probability assessment, utility assessment, and decision-making processes), but this field has now broadened to include important social, political, and cultural factors (Edwards, 1961; Slovic, 1987, 2000). Even though there are many attempts to explain risk perceptions, there are two main perspectives that have gained major importance; the Psychometric paradigm by Fischoff, Slovic et al., (1978, 1984) and the Cultural Theory by Douglas and Wildavsky (1982). Despite these perspectives have been criticized by some researchers (For a discussion and critical review of these perspectives/models, see Boholm, 1996; 1998; Sjöberg, 1996, 2002) they have made significant impact on risk perception research and related research fields. The psychometric 'model' was influenced by the results of Starr (1969), and Tversky and Kahneman's work on 'heuristics' and subjective probabilities (e.g. 1974), and was initially developed to explain people's responses to threats posed by natural hazards. Soon the model was developed to also explain responses to technological hazards, and has since been applied to explain, for example, perceived risk from medicines (Slovic, 1989), electric and magnetic fields (MacGregor et al., 1994), or perceived risks related to transportation and storage of nuclear wastes

(e.g. Kunreuther et al., 1990). The paradigm assumes that risk is subjectively defined and influenced by psychological, social, institutional, and cultural factors, notably novelty (new risk/technique), and dread (dread and severity of consequences). However, explanatory factors such as trust, stigma, affect, and other factors such as the media may also explain risk perceptions (Fischoff et al., 1978; Finucane et al., 2000; Flynn et al., 2001; Gregory et al., 1995; Renn et al., 1992; Slovic, 2000).

Anthropologists Douglas & Wildavsky's Cultural Theory (1982) is based on the belief that people's perceptions of risk are affected by various social and cultural factors. The theory relates risk perceptions to cultural theory, and asserts that people who belong to a group tend to emphasize some risks while neglecting others (Slovic, 2000, p 221).

Stakeholder considerations in risk management

For business organizations as well as for society, stakeholder involvement has been underscored as important in a broad range of activities. For business, earlier focus on shareholders and shareholder value has partly been succeeded by a focus on various stakeholders that are important for the company (Borglund, 2006; Carrol, 1989; Clarkson et al., 1999; Donaldson and Preston, 1995; Elliott et al., 2000; Freeman, 1984; Jones and Wicks, 1999).

Freeman, with his 1984 landmark book *Strategic Management: A Stakeholder Approach*, is allegedly the modern father of the stakeholder theory (Jones and Wicks, 1999; Donaldson and Preston, 1995; Carrol, 1989; Borglund, 2006). Freeman (1984) stressed that a company has relationships with many constituent groups, referred to as stakeholders, who affect and are affected by the decisions and actions of the company. Freeman defined stakeholders as members of groups who were essential for the survival of the corporation, such as employees, customers, suppliers, shareholders, and the local community. The scope of the stakeholder approach is to identify and analyze the nature of these relationships in terms of processes and outcomes (Jones and Wicks, 1999).

In societal as well as business risk management, the benefits of stakeholder involvement in the risk assessment and the risk management processes have been increasingly underscored during the last two decades (COSO II, 2004; European Commission, 2001; ISO, 2007; Kasperson et al., 1988; Löfstedt, 2004, Löfstedt and Vogel 2001; NRC, 1996; Renn,

1999; 2003; Slovic, 1986, 2000). A number of reasons for this development are given, notably regarding societal risk management. Firstly, a significant number of regulatory scandals regarding risks have lowered the public's trust toward regulators and industry (e.g. the Belgian dioxin crisis in 1999, or the Mad Cow Disease in the 1990s) (Löfstedt, 2004; Löfstedt and Vogel, 2001). Trust is believed to be an important explanatory variable of the public's perception of risk (Löfstedt, 2004; Löfstedt and Vogel, 2001; Slovic, 1993, 1997). Secondly, despite billions of dollars being spent on risk management and risk mitigating initiatives, many people have been found to be more rather than less concerned about risk (Gregory et al., 1995; Slovic, 1997). Thirdly, public perceptions of risk have been found to direct priorities and legislative agendas of various regulatory bodies (Slovic, 1997; Sjöberg et al., 1998) This might be problematic in the sense that financial resources are directed at mitigating risks of public concern rather than being based on cost-benefit risk analysis. Fourthly, the dichotomy of the hypothesis that experts are able to make analytical, objective, and rational judgments, while laypersons' perceptions of risk are subjective, irrational, and emotional, has been challenged (Slovic, 1997, pp 277-278). This revised view of experts' superiority in rational decision-making has support in research relating to other areas as well (Andersson, 2001; Andersson et al., 2005; Camerer and Johansson, 1991; Tetlock, 2005). Fifthly, based on research on risk perceptions, risk communication, and trust, the view that risk is merely an objective function of probability and adverse consequences has been questioned. The technical concept of risk is too narrow and ambiguous to serve as the crucial yardstick for policy-making (Kasperson et al., 1988, p 178). Social science researchers argue rather that risk is inherently subjective (Pidgeon et al., 1992; Slovic, 1992, 1997).

Even though the benefits of an inclusive deliberative approach to risk assessment and risk management have been stressed in the past (Ruckelshaus, 1983)[5] the emergence of such approaches is rather recent, both in the US and in Europe. In the US, the earlier belief that risk analysis was mostly an objective and scientific activity and the province of experts (NRC, 1983) has been modified and a stakeholder approach concerning both risk assessment and risk management has been promoted (NRC, 1996).

[5] Former US Environmental Protection Agency (US EPA) administrator William Ruckelshaus argued in 1983: 'To manage risk effectively, we must seek new ways to involve the public in the decision-making process... They [the public] need to become involved early, and they need to be informed if their participation is to be meaningful (Ruckelshaus, 1983, p 1028).

Similarly, in Europe, there has been a shift from consensual, elitist, and technocratic approaches to risk management to more inclusive deliberative models. Negotiated risk solutions among stakeholders have been adopted, rather than an imposed risk management solution based on experts' view of risk (Löfstedt, 2004; Löfstedt and Vogel, 2001; Shrader-Frechette, 1991). As will be discussed in the next paragraph, these developments have vast importance for risk communication.

Despite a broad acceptance of this new deliberative approach to risk analysis, there are critical elements to consider. For example, the development towards more value-focused thinking regarding risk may have spurred various political controversies about risk management. There have also been concerns over the general public's interest in, and abilities to judge risk correctly (Slovic, 2000). Problematic consequences that stem from lobby activities and media screening of risk events have also been raised. A further problem using the deliberative/stakeholder approach to risk assessment and management is believed to be the diversity and at times also conflicting views of various stakeholders (Accorsi et al., 1999, Löfstedt, 2005).

Correspondingly, it has been argued that the stakeholder approach to risk management must be used with caution. The suitability of involving stakeholders in the risk assessment and management process is highly dependent on the type of risk, and on the context (Löfstedt, 2005).

Risk communication

Slovic (1997) stressed that the 'risk management battlefield', with its controversies and overt conflicts, has become pervasive within risk assessment and risk management. In order to solve these controversies, the need for proper risk communication has been increasingly underscored since the mid-1980s. However, as crucial as it is, it is a highly complicated element of risk management (Fischhoff, 1995). As put forth by William Ruckelshaus (1984), risk communication and informing about risks has a high potential of failure. This is true for society, as well as for business organizations (see e.g. Study I; Fischhoff, 1995; Löfstedt, 2003c; Slovic et al., 1982).

There are several reasons for this: Firstly, there is a need to understand various shortcomings in public perception of risk. As risk is inherently about uncertainties, and is frequently related to hard-to-grasp scientific problems, most of us find it difficult to understand risk. Slovic (1986, pp 404-405) argued that; 1) people's perceptions of risk are often inaccurate, 2) risk information may frighten and frustrate the public, 3) strong beliefs are hard to modify and change slowly, and 4) naive views are easily manipulated by presentation format.

Secondly, trust is a crucial prerequisite for successful risk communication. Trust has been assumed to account for variation in risk perceptions (Slovic, 1993). Subsequently, if the general public becomes distrustful, it will also become more risk-averse (Kasperson et al., 1992; Löfstedt, 2004). Lately, there has been an erosion of the general public's trust in industry and regulators in Europe. This has been explained to a great extent by factors such as the number of recent risk management failures, as well as by the media (Bier, 2000; Kasperson et al., 1988, Löfstedt, 2004; Löfstedt and Vogel, 2001; Pidgeon et al., 2003; Renn et al., 1992; Slovic, 1986).

Government and industry risk communicators face difficult challenges today. As the risk management climate has changed in Europe, as well as in the US, from a technocratic model to more inclusive deliberative models, risk communication skills have become even more important (Löfstedt, 2004; Renn, 2003).

From a business perspective, the loss of trust and consumer confidence might substantially affect brand value, and subsequently, the value of a company. With great similarities to the characteristics of trust, brand value is hard to build but is easily destroyed. As a consequence of a crisis, and poor risk communication, companies may be faced with reputational risk, that is, the risk of losses owing to a firm's damaged reputation (Jorion, 2006). There are many examples where companies have suffered substantially from poor risk communication strategies, and thereby in which reputational risk has increased. One illustrative example is that of ABB and the asbestos litagtion (study I). An other concerns the Swedish acrylamide "alarm" in 2002, when the Swedish National Food Administration and a group of researchers (faulty) raised an alarm regarding potential health risks with eating fried and baked food. Due to the hardship of communicating scientific risk, vast media screening of the issue, and public responses, the alarm had an immediate negative effect on sales of acrylamide containing products as well as on the producing companies' share price (Löfstedt, 2003).

The corporate 'risk map'

Corporate risks are traditionally categorized either as business or financial risks. Other risks that companies face are frequently subordinated to these risk categories.

Business risk is related to business decisions and the business environment. It refers to risks associated with investment decisions, product-development choices, marketing strategies, etc. Risks related to the business environment include competition and broad macroeconomic risks (Jorion, 2006; Smallman, 2000). Sometimes business risk coincides with operational risk. However, in contrast to operational risks, such risks are assumed willingly by the corporation 'to create a competitive advantage and add to value for shareholders' (Jorion, 2006, p 4).

Financial risk relates to possible losses owing to financial market activities. Building on American economist Harry Markowitz's portfolio theory, American economists William Sharpe and John Lintner developed the famous Capital Asset Pricing Model (CAPM) (Lintner, 1965; Markowitz's, 1952; Sharpe, 1964). CAPM is the main framework for analyzing the relationship between the risk of an asset and its expected return (Bernstein, 1996). Financial risks are broadly classified into market and firm-specific risks, where the former is attributable to market-wide risk sources and cannot be diversified away. The firm-specific risk on the other hand can be eliminated by diversification (Grinblatt and Titman, 1998).

From a financial risk perspective, there have been attempts to make formal quantifications of operational risks using various techniques (e.g. value-at-risk). As such, they classify operational risk as one risk among other financial risks (Jorion, 2006, King, 2001). However, given the different natures of operational risks (which will be discussed in the next paragraph), financial risk and financial risk management will not be further discussed. Even though various operational risks frequently have significant economic and financial consequences if realized, financial risk will henceforth merely be discussed as a so-called second-hand risk (see Study I and II).

Smallman (2000a) argued that the predominant view of *risk management* as a financial activity is too narrow. It fails to acknowledge all the hazards that businesses are facing. As risks are frequently related to failures of processes, techniques, or people, the financial approach to risk management is not considered enough, or even an appropriate one (Elliott et al., 2000; Smallman, 2000b; Ward, 2001). Operational risk management moves beyond the financial, quantitative, and clear-cut conceptualization of risk assumed to be a prerequisite for gain and reward. Operational risks are different from other risks that a company is facing in the sense that there are rarely exogenous sources of data, such as there are in the case of most financial risks. Data is instead closely linked to the quality of the internal control environment (Jorion, 2006, p 497). Operational risk relates to the negative deviation of a firm's performance due to how the firm is operated (King, 2001). In contrast to other risks that a company faces, operational risk can only generate losses (monetary or others like trust). Thus, there is a need to reduce rather than seek exposure to these kinds of risks (Davis, 2005; Jorion, 2006; King, 2001; Smallman, 2000a). As put forth in the introduction of the thesis, operational risks are preferably conceptualized as 'the probability of an adverse event multiplied by the extent of the damage caused' *(*e.g. Pidgeon et al., 1992*)*. However, a more formal definition that has gained general acceptance is provided by the Bank for International Settlement in Basle: 'the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events' (BIS, 1998).

Noteworthy examples of operational risks are interruption in a business process due to lack of maintenance, employee incompetence, fire, internal or external fraud, lack of workplace safety, employee health problems, corruption, insider trading, product flaws, environmental hazards, reputational risk, or PR risks.[6]

In a general sense, the scope of operational risk management is to help companies to avoid unexpected losses, improve their operational efficiency, make more efficient use of capital, and generate more accurate compliance with regulation. Successful risk management should be able to identify risks, classify risks as controllable or uncontrollable, identify causes, provide measured feedback on risks, and relate them to management actions (King, 2001, p 48). Based on ideas from risk research with more societal focus, such as nuclear safety and environmental health (e.g. NRC, 1983), guidelines on operational risk

[6] Reputational and PR risks are excluded in the BIS definition addressed above.

management have been expanded to include a broad variety of business activities relating to corporate governance, accounting, insurance, environmental risk management, and others. Despite the fact that the scope of risk management models differs (based on scope and focus, risk area), there is broadly consensus regarding the various phases of the risk management process. The novel and evolving risk management guideline ISO 31000 (expected in mid-2009), stipulates the phases and interactions shown in Figure 1 (ISO, 2007).

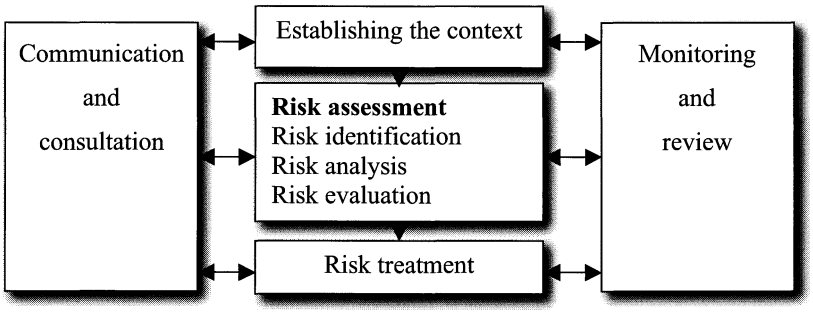

Figure 1. The risk management process (ISO, 2007).

Operational risk management is by no means a recently occurring task for managers or companies, but the idea that such risks should be managed by a separate organizational function with its own tools and processes is recent (Smallman, 2000a,b; Ward, 2001). As shown in Study II, in a Swedish industry setting, it is apparent that central organizational functions for dealing with issues relating to operational risk have emerged. However, there are few similarities in how such functions are organized.

There are several reasons for the increased focus on operational risk. Study II highlights a set of interrelated factors that has been said to be important for its development. Firstly, over the last decades a broad set of new risks has emerged. These risks are due to factors such as increased dependence on IT, the accelerating pace of business, globalization, terrorism, technology failures, deregulation as well as regulation of industries, increasing public exposure in the media, and attention from various non-governmental organizations (Anderson, 1999; CAS, 2003; EIU, 2007a,b,c,d; ISO, 2007; Jüttner, 2005; King, 2001; Ward, 2001). For companies, risks relating to these factors are crucial to manage, and have boosted more formalized approaches to operational risks. For

example, the fears of the Y2K bug stimulated companies to improve the security and control of their IT systems. The events of 9/11 in 2001 brought new and previously unconsidered risks with significant economic, social, and political impacts (Gates and Hexter, 2005; Sjöberg, 2005).

Secondly, it has been argued that the evolving interest in, and demands for more systematic approaches to operational risk have emerged as a result of numerous publicly exposed business failures and calamities (Gapper and Denton, 1996; Holton, 1998; Hussain, 2000; King, 2001; Löfstedt, 2004; Löfstedt and Vogel, 2005). Illustrative examples where companies and their stakeholders have suffered from poor risk management are the Brent Spar/Shell controversy in the 1990s, the Three Mile Island accident in 1979, the Enron Corporation collapse in 2001.

Thirdly, the focus has increased on operational risk due to wider environmental concerns among the public and in business life, increased environmental regulation, and increased awareness of various corporate responsibilities (Accorsi et al., 1999; Anderson, 1999, 2006; Sullivan and Sylvester, 2006; PwC, 2008).

In response to those factors, many stakeholders have promoted increased awareness of operational risk, better structure, and more formal activities to assess and manage operational risks. They have also opened up to demands of more integrated and wider approaches to manage overall risk exposures in companies. As shown in the next paragraph, regulators in many countries and international forums (e.g. the EU and UN), and business organizations (relating to elements like accounting rules or insurance) have promoted this development.

Towards an integrated approach to risk management

Following business failures (mainly due to fraud, incompetence, or process failures) such as Bank of New York in 1985, Barings Bank in 1995, National Westminster in 1997, regulations for the financial industry emerged in the 1990s. Risk management frameworks such as the COSO in the US (COSO, 1992) [7] and the Bank for International Settlement regulatory documents regarding operational risk management (BIS, 1998, 1999) have been implemented widely. In line with the norms outlined by BIS, the EU has adopted the EU Capital Requirements Directive (European Commission, 2006). In a broader sense (relating to all public companies), the UK Combined Code (Turnbull Report, 1999, 2003), the

[7] The Committee of Sponsoring Organizations of the Treadway Commission.

COSO, II on enterprise risk management (COSO, 2004), and the German KonTraG (1998) are examples of guidelines/regulative documents promoting a greater control of all risks that a company is facing, including operational risks (further discussed in the next paragraph). In Sweden, the government has issued the Swedish Code of Corporate Governance, which encourages transparency and risk control (SOU 2004:130).[8] Non-financial risk exposure (e.g. relating to environmental and occupational risk exposure) is regulated in the Annual Accounts Act (1995:1554:6). Apart from regulators, various business/standardization organizations, the UN, and academia have provided voluntary guidelines with implications for operational risk management. For example, the International Standardization Organization (ISO) is due to present a risk management framework/guideline in mid-2009 (ISO, 2007), and the UN launched the Global Compact and Global Reporting Initiative (GRI) in 2000 (UN, 2008).[9]

Enterprise risk management

As shown above, due to the increased complexity, and broader scope and scale of risks exposed to companies, various stakeholders have increasingly stressed the need of improved risk management strategies, and of new methods to assess, analyze and manage risk (Doherty, 2002; Gates and Hexter, 2005; ISO, 2007; Ward, 2001).

The need for a broader and more coherent approach to all risks that a company potentially faces has been stressed. As a response, a new risk management approach has emerged. This approach is *Enterprise Risk Management* (ERM). ERM is also referred to as enterprise-wide risk management, integrated risk management, and firm-wide risk management (CAS, 2003; COSO, 2004; Gates and Hexter, 2005; Jorion, 2006). Like operational risk management, there are multiple stakeholders that have taken an interest in ERM, and like operational risk management, there is no common recipe for implementing ERM. However, moving beyond mere consultant activities to ERM, in the US there have been formal regulative rules for ERM since 2004. The concept has mainly developed in the US, and notably with an insurance or accounting perspective (CAS, 2003; COSO, 2004; Enterprise Risk Management, 2008).

[8] A revised version of the Code came into use in 2008. Further discussed in 'point of arrival'

[9] Guideline to measure and report economic, environmental, and social performance, e.g. on employee incidents, employee security and crime, and industrial incidents.

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides the following definition of ERM, which has gained much acceptance:

> A process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (COSO, 2004, p 2).

ERM has been discussed for thirty years, but it has not been considered a coherent management tool until recently (Beaumont, 2007). ERM stresses a more holistic view of the risks affecting a company and promotes a portfolio approach to risk management. It provides a structure to link various risks together and emphasizes that enterprise risk is not just the sum of various risk elements but also of risk interactions (Beaumont, 2007; CAS, 2003; Holton, 1998; Jorion, 2006). ERM broadens the scope of risk and risk management beyond merely operational risk, to incorporate also financial, reputational, business, political, strategic, and other risk considerations At the core of ERM is the belief that risk management can be a value-creating process, in addition to being a risk-mitigating process (Beaumont, 2007; CAS, 2003; Holton, 1998; Jorion, 2006). The ERM approach presupposes a broader risk classification than in the past. To some extent it delimits the scope of operational risk management as it categorizes some operational risks as belonging to strategic, reporting, or compliance risk categories. This is not considered in this thesis, but is rather an indication of the complex task of categorizing corporate risks.

Study II of this thesis shows that there is little support for ERM in Swedish industry. In an international setting it is argued that companies are still struggling with ERM (Barlas et al., 2006; Ceniceros, 2008). Hampton (2007) declared that this is frequently due to the fact that most efforts to categorize risk do not align the risk areas with the organizational business model.

Over the past ten to fifteen years the business context has changed significantly, with environmental and social factors increasingly affecting everyday business life. As a result of this development, various principles and policies on environmental risk management, operational risk management, corporate responsibilities, and sustainable development have been incorporated into business plans, corporate guidelines, core value statements, and subsequently into a broad array of business activities (Jallow et al., 2007; Smallman, 2000; Stratling, 2007). There has been a definite shift in business thinking regarding the responsibilities that a corporation has towards the surrounding society, employees, shareholders, and other stakeholders (Stratling, 2007). More or less convincingly, companies engage in the 'greening of industry' and the more overwhelming concepts relating to corporate responsibility (CR) (Carroll, 1999; Cooper, 2004; Crane, 1995; Faragher, 2008; Gunningham et al., 2003; Graham and Hartwell, 1997; Stead and Stead, 2004; Vogel, 2005).

In the 1980s, the scope of CR was focused on environmental risk management in regard to emissions and waste from industrial processes. Central stakeholders were regulators and various non-governmental organizations (Ljungdahl, 2008). However, it was not until the 1990s that environmental risk management was increasingly stressed as a completely corporate responsibility. Driven by factors such as globalization, outsourcing, and increased public concerns of environmental problems, proactive work with environmental issues was increasingly considered to be a competitive advantage. Environment versus competitiveness became a false dichotomy (Godfrey, 2006; Porter, 1998). By changing processes, the use of resources, recycling, waste management, and emissions control, companies decreased their own risk exposure, the risk for their employees, their communities, and society at large (Ljungdahl, 2008). Consequently, these activities reduce the risk of consumer punishment, fining, litigation, and negative media exposure (Anderson, 1999; Löfstedt, 2005; Vaughan and Mulliken, 2007).

In the early 2000s, a broader stakeholder interest for CR lifted the agenda above environmental risk management and compliance. Factors like occupational risk exposure and health and safety issues for employees were given more and more consideration. Social as well as economic

factors were increasingly highlighted, and many companies implemented various CR principles that go beyond mere risk management, involving normative, ethical, and responsibility factors of business life (Clapp, 2005; Cooper, 2004; Elkington, 1998; Örhlings Price Waterhouse Coopers, 2008).

For the business organization, increased activities of risk management and of corporate responsibility have developed in parallel. There are many lowest common denominators. Increased insight by regulators into these areas as well as into overall corporate governance issues have promoted this development (Kevin and Herman, 2007; Ljungdahl, 2008; Rämö, 2003). Social responsibilities, as regarding child labor or occupational health and safety issues, as well as various environmental responsibilities are (beyond rhetoric) formally managed with a risk perspective. Various sustainability and responsibility issues are discussed in relation to operational risk management in Studies I, II, and III, and is more specifically the focus of Study IV.

The empirical part of the thesis consists of four studies, which are summarized below. The studies are presented in chronological order (of collection of data), but with one exception (Study IV). The studies build empirically on independent data collections conducted between 2004 and 2008. All studies contribute new insights into the field of operational risk management, but as will be shown, the studies focus on quite distinct and disparate areas.

Study I
The role of risk in corporate value: A case study of the ABB asbestos litigation

This study investigates the relationship between risk communication and share price developments. The case discussed is that of Asea Brown Boveri's (ABB) asbestos litigation and the dramatic consequences that their poor risk management and risk communication had for the company. The case study builds on a media content analysis related to financial data such as share price development, stock turnover volume, and standard deviation of ABB stock. It builds theoretically on the social amplification of risk framework, SARF (Kasperson et al., 1988; Renn et al., 1992), which stipulates that information processes, institutional settings, and structures affect, amplify, and attenuate perceptions of risk. An objectively assessed minor risk might be amplified or attenuated through various ripple effects, generating secondary and sometimes also third order impacts. Broadly, possible impacts according to the framework are: loss of business, financial losses, regulatory constraints, organizational changes, litigation, increase or decrease of physical risk, loss of confidence in institutions, and sabotage or terrorism. The case study indicated that all these factors but the last two had been present in the ABB case. The study focuses mainly on how media (i.e. information processes) and the American legal system (i.e institutional setting) affected the ABB asbestos litigation, and substantially increased the perceived risk of ABB. Between January 2001 and December 2002 the share price fell by roughly 90 percent. During this time period, 35 'peaks' characterized by high stock volatility and turnover volumes were identified. The media content analysis indicates that more than 50 percent of the fall was related to asbestos reporting by the media and by ABB.

These results are an indication of the importance of ABB asbestos reporting in the media, rather than a definite and precise financial estimation. Moreover, significant changes in various legal approaches on how to manage the asbestos plaintiffs were found to have increased the risk for ABB, both in real risk terms (i.e. increase of liabilities), but also regarding the overall perception risk. The company's underestimation of their liabilities increased the public perception of a company in crisis, which further eroded the already low public (investor) trust in the company.

Rowan (1996) argued that media are frequently interested in conflict and sensationalistic stories. As regards the ABB case, this was true to a certain extent. Media reporting of ABB could frequently be characterized as dramatic or catastrophic. The study indicates that the extensive media reporting regarding asbestos attributed to decrease in trust, increase of reputational risk, and consequently a lower share price.

The outcomes for ABB could have been different if more precise and defined ways of managing and communicating risk had been employed. Due to the asbestos crisis, ABB has implemented more structured operational risk management tools and pay more attention to environmental and social risk factors. This new strategy has emerged mainly as a result of increased work on sustainability issues and a shift from a consensual/technocratic risk approach to a more deliberative mode of risk management.

Study II
Operational risk management in Swedish industry: Emergence of a new risk paradigm?

For a company, there are many risks that have to be managed. These risks may stem from financial activities or be related to a company's business activities and operations. Operational risks have always been managed by the industry, however, it is unclear how operational risk management as a structured and formalized activity has been accepted and implemented by the Swedish industry. Based on interviews with 20 experienced chief risk officers in Swedish industry, the aim of the study is to investigate and analyze current opinions and considerations on the implementation of operational risk management. Furthermore, the possible development towards more integrated risk management approaches as proposed in Enterprise Risk Management is examined.

The results of the interviews indicated that a new risk paradigm has emerged. A majority of the respondents stressed that operational risk management was increasingly focused on by their companies and was extensively supported by top management and board. The results of the interviews indicated that the Swedish industry approach to operational risk management is today rarely a strictly formalized, straightforward activity. Instead informal, decentralized, pragmatic, bottom-up approaches to operational risk management are preferred over an enterprise risk management approach to overall risk exposures. They argued that the role of their 'functions' was not to treat risks. Instead they stressed their role as educators and advisors regarding risk issues. According to the respondents, the responsibilities of the function responsible to manage operational risks were mainly to identify and analyze various operational risks in the organization and the reasons for business interruptions, to develop risk criteria, and to identify needs for insurance.

As regards stakeholders believed to have affected the firm's operational risk management strategies, the respondents stressed that they had been strongly influenced by the Swedish government's regulatory approach, notably regarding environmental and occupational risk. As regards the firms that were listed at the US stock exchange, or had significant subsidiaries in US, Germany, or England, the respondents stressed various regulations regarding accounting rules, corporate governance, or financial regulations such as the Sarbanes-Oxley Act, SOX (2002), COSO I and II (1992, 2004), The UK Combined Code (1999), and the Securities and Exchange Committee in the US. Moreover, the respondents argued that the insurance industry put formal demands on them, and that financial institutions and the financial markets influenced their course of action. Various guidelines and policy documents relating to corporate responsibility and corporate governance were also perceived as important (e.g. the Swedish Code of Governance, SOU 2004:130).

Finally, the respondents emphasized several challenges in the achievement of successful risk management, such as dissimilarities of employees' risk perceptions, risk communication, cultural differences, and measurement and assessment of operational risk.

Study III
Corporate risk management of chemicals: A stakeholder approach to the brominated flame retardants

In the past two decades, Europe has suffered from numerous risk management failures and controversies. These controversies have induced more inclusive and deliberative approaches to risk management in a societal setting, as well as in business. Moreover, the EU and individual countries have increasingly applied the precautionary principle and various precautionary measures. These developments have stimulated stakeholders (e.g. the industry and business organizations) to engage in the debate on preferable approaches of managing risk, and have clearly affected the prerequisites for chemical risk management and many other risks that companies are facing.

The study relies on data collected by questionnaires in 2007. The questionnaires were delivered to employees working with environmental and chemical risk management in eight Swedish industry companies: ABB, Alfa Laval, Atlas Copco, Autoliv, Electrolux, Ericsson, Scania, and Volvo. The objectives of the study are to (1) explore the opinions in Swedish industry concerning items related to chemical risk assessment and regulation, and (2) to identify and analyze various stakeholders and factors perceived to have affected the companies' risk management strategies of the brominated flame retardants (BFRs).

The results indicated somewhat contradictory opinions as the sampled companies favored national precautionary measures, although at the same time they favored scientific EU risk assessments over national regulation. Contrary to industry opinions elsewhere, they were also favorably inclined to the reversed burden of proof and to the REACH directive. Regarding the BFRs, the companies' risk management strategies were believed to have been mostly influenced by a) internal policies and guidelines regarding sustainable development and corporate social responsibilities, b) the application of the precautionary principle, c) EU directives/risk assessments, d) The Swedish Chemicals Agency and Swedish research, and e) PR considerations.

Overall, the study indicates that the investigated companies were somewhat inconsistent regarding preferred approaches to manage risk. The study ends with a discussion on possible reasons for these inconsistencies. Notably, various historical factors relating to public/political decision-making (negotiated and broadly accepted regulation), governmental spillover effects regarding precautionary measures, competitiveness, PR, and current corporate and societal trends (such as sustainable development and corporate responsibility strivings) are discussed.

Study IV
Employee attitudes to corporate responsibility: Evidence from Swedish industry

Motivated by the belief that employees are crucial stakeholders in the fulfillment of various corporate responsibilities (CR), this study aims at investigating employee perceptions and attitudes concerning CR importance (in general) and success (regarding their firms), and towards various perceived reasons for their firm's CR activities. Moreover, the study aims at discerning to what extent external ratings of a company's CR are likely to be satisfactory proxies for actual CR success, as perceived by the employees. The study is based on a questionnaire survey that was conducted in 2006. One hundred twenty employees (48 percent response rate) at three multinational companies responded to the questionnaire. In brief, the study reports the following four results: 1) There was a significant discrepancy between environmental responsibility (ER) and social responsibility (SR) ratings. This was true regarding both perceived importance and perceived success. In both cases, ER was considered more important and more successful than was SR. 2) Personal attitudes /behaviors regarding a set of environmental issues rather than personal background factors such as gender, age, education, and occupational role correlated with rated importance of CR. 3) PR and marketing, compliance with regulation, and profit incentives were rated as more important reasons for CR (overall CR) than were external stakeholders such as customers, competitors, non-governmental organizations, and the financial markets. 4) Finally, there was support for the use of external ratings as a proxy for CR success, as perceived by the respondents.

In this thesis, various aspects relating to operational risk management are investigated. More specific, the thesis aims at investigating and analyzing if, and how, operational risk management has developed into a more formal activity in Swedish industry. Moreover, it aims to discern what stakeholders, contextual and other factors that are important for explaining this development, and the consequences that may be the result of poor operational risk management. Organizational aspects and various challenges with operational risk management are investigated and discussed.

As a formalized activity, operational risk management is a somewhat new task for the industry, and subsequently also for scholars and stakeholders who promote an increased awareness and management of operational risk. In this thesis I have applied a broad research approach to, and definition of, what constitutes operational risk. The four studies are somewhat diverse in scope and aims, but together, I believe that they contribute to an increased understanding of aspects relating to operational risk management in Swedish industry. In the following, I will draw a broader picture of the results of my research. In Table 1, the main findings of the four studies are presented. Then follows a discussion on some common features of the results and the 'point of arrival'.

Table 1. Main findings of the studies

Study	Main findings
Study I	• In the light of a severe crisis, perceptions of risk are likely to direct the outcomes for a firm. Financial models are too narrow to appreciate corporate value. Thus, accurate risk communication is crucial. • Dramatic first-hand risks spur the occurrence of second-hand risks and affect the overall risk profile of a firm (notably financial risk exposure). • Media are crucial stakeholders to consider when a firm faces a severe crisis relating to risk and risk management. • In the light of a severe crisis, media reporting is sometimes flawed or incorrect. In the case of ABB, media reporting was frequently 'dramatic' or 'catastrophic.'
Study II	• Swedish industry's approach to operational risk management is rarely a strictly formalized, straightforward activity. Instead informal, decentralized, pragmatic, bottom-up approaches to operational risk management are preferred over an enterprise risk management approach to overall risk exposures. • Stakeholders such as insurers, the financial markets, and the Swedish government's regulatory approach (strict environmental approach) had directed the firms' risk management activities. • Voluntary compliance with corporate governance, sustainable development, and corporate responsibility guidelines are important for the development of operational risk management. • Risk perceptions, cultural differences, risk communication, and measurement of operational risk were considered to be significant challenges in the fulfillment of a successful operational risk management.
Study III	• The investigated firms were found more precautionary than expected, positive to REACH, and open to the reversed burden of proof. • The firms favored scientific EU risk assessments over national regulations. • They displayed a somewhat contradictory approach to chemicals (environmental) risk management. • The investigated firms' risk management of the brominated flame retardants had been guided by elements relating to corporate responsibility, the precautionary principle, EU directives, the Swedish Chemicals Agency and Swedish research reports, and PR and marketing considerations.
Study IV	• Overall corporate responsibility (CR) was found highly and equally important among respondents from the three firms. • Rated importance of CR correlated with a set of personal attitudes/behaviors related to environmental protection. • The respondents differed significantly in firms' success ratings of CR. • Environmental CR was significantly higher rated in importance to firms' success than was social CR. • Success ratings of CR corresponded to external (objective) CR ratings of the firms. Thus, external ratings of CR might work as a proxy for actual CR success as perceived by employees. • PR and marketing incentives, compliance with regulation, and profit incentives were rated as more important reasons for companies' CR activities than were external stakeholders such as customers, competitors, non-governmental organizations, and the financial markets.

As presented in Study II it is evident that a new risk paradigm has emerged, and that operational risk management is very important for Swedish industry. Increased support from management and board, as well as increased employee involvement and interest in these issues are all significant for this development.

As a consequence of the increased frequency of publicly highlighted business failures and scandals, regulators have become more interested in how companies manage their various operational risks. In all four studies, regulators such as the Swedish government or the EU were stated as the most, or at least highly important for the companies' risk management strategies. This was true regarding the ABB case (Study I), the more general developments of operational risk management and enterprise risk management (Study II), chemicals and environmental risk management (Study III), and corporate responsibility (Study IV).

All the investigated companies were Swedish. As such, they are affected by the Swedish approach to environmental and occupational risk management, and health and safety regulations. I believe this is important to consider and I will discuss three important factors that are likely to have affected how Swedish industry manages risk.

Firstly, in Sweden, political decision-making and the formulation of new regulations have historically been characterized by a centralized but inclusive approach involving government, industry, trade unions, the Confederation of Swedish Enterprise, NGOs and other. As a consequence, regulations are normally adopted by industry without public disputes (Kelman, 1981; Löfstedt, 2004). As shown in Study III, this consensual model is likely to have affected industry acceptance of many governmental regulative initiatives and much of the thinking regarding risk and risk management.

Secondly, Sweden has historically promoted a strict environmental regulative approach both in Sweden and in the EU, and has early on promoted the reversed burden of proof. Sweden has also been active in promoting precautionary measures, and this has been reflected to a great extent in the Swedish approach to national as well as EU environmental policy (Johannesson et al., 1999; Löfstedt, 2003b; Karlsson, 2006). As found in Study III, industry was positive to precautionary measures, and in Study II the respondents point out that their companies have historically over-complied with regulation.

Thirdly, in line with the Swedish approach to environmental regulation, Sweden has been highly active in promoting various environmental and

sustainable measures in Sweden and in the EU (Löfstedt, 2007; Karlsson, 2006). It has been mostly aimed at environmental risks, but various social factors and risks relating to issues like occupational risks, health, and safety have also been considered (Johanesson et al., 1999). The importance of sustainable development and corporate responsibilities related to economic, environmental, and social factors are pointed out as important reasons for the development of operational risk management in all the studies.

As previously stated, there are major economic incentives for managing operational risks, such as avoiding unexpected losses, improving operational processes, and compliance with regulation (King, 2001). The economic advantages of operational risk management are not explicitly stressed in the four studies. However, the costs of failing to manage such risks are discussed in Study I. Profit incentives were perceived as very important reasons for various activities relating to corporate responsibility in Study IV. Study II describes an important economic reason for involvement in operational risk management, which is that there is external pressure from financial actors such as pension funds and other financial investors. They were found to be increasingly prone to invest in well-managed and transparent companies with better control over risks. This increasing pressure on companies from financial actors is stressed in other research as well (Hellman och Lind, 2005; Strömsten, 2008). Moreover, respondents frequently stressed reputational risk as an incentive for operational risk management. As shown in Study I, poor risk management and poor risk communication can be fatal, and might have vast implications for investor/consumer risk perceptions, trust, and consequently brand value, share value, and profits. Media was found to have been a crucial factor for shaping investor and public risk perceptions of ABB. Respondents in Study II stressed the need to work with operational risk management in a pro-active manner rather than a re-active manner in order to avoid bad publicity by media and to reduce reputational risk. Respondents in Study III perceived PR and marketing incentives to be very important regarding risk management strategies of the brominated flame retardants. Respondents in Study IV stressed PR and marketing incentives as very important drivers for their firms' activities in environmental and social corporate responsibility.

In comparison with many countries such as the US, Germany, and the UK, there are fewer regulative initiatives on how Swedish industry should report and manage its overall risk exposure, including operational risks. Rather, the Swedish industry approach to operational risk management is previously likely to have been more directed by an overall precautionary Swedish approach to risk, promoted by the Swedish government and significantly adopted by the industry itself. Lately, a broad acceptance and incorporation with various policies and guidelines relating to sustainable development and corporate responsibility has furthered this development. More formally, the Swedish Code for Corporate Governance (SOU 2004:130) has been directive, as it promotes greater transparency and control over various risks, and the Annual Accounts Act (ÅRL, 1995:1554:6) provides recommendations on how to report environmental as well as occupational risks.

With regard to the development of more formal approaches to operational risk management and enterprise risk management, it is essential to stress that there are international spillover effects, as well as more formal regulations that are likely to affect Swedish industry risk management in the future. Besides that the investigated companies are multinational companies, and frequently have to comply with national regulation in the countries where they operate (see Studies I and II), in the last years, there have also been regulative changes within Sweden and the EU that affect operational as well as enterprise risk management.

Even though these rules are mostly directed to financial reporting, they increasingly address all the risks that a company faces with financial consequences. In 2008, a revised Swedish Code for Corporate Governance has come into effect. The Code has been simplified, but broadened to apply to all companies at OMX Nordic Exchange and NGM Equity. The Code is still based on the 'comply or explain' approach (The Swedish Corporate Governance Board, 2008). These changes have been driven by corporate critique of the previous Code, updates of international governance codes, but to a greater extent, by various governance initiatives by the EU, and an updated EU regulation regarding accounting rules. For example, since 2005 all public companies in the EU must apply new accounting rules as stipulated in the International Accounting Standards (IAS), and International Financial Reporting Standards (IFRS) (European Commission, 2002). Amendments on various directives (Notably the 4th and 7th EU Council Directives 78/660/EEC, 83/349/EEC) relating to annual accounts and consolidated accounts for financial

institutions and insurance companies will be directive for Swedish legislation, and will have implications for corporate governance (European Commission, 2006; Swedish government, 2008; The Swedish Corporate Governance Board, 2008). Due to revisions of the Code, amendments of EU regulations, and Swedish legislation, Swedish auditors and accountant's organization (FAR SRS) in collaboration with the Confederation of Swedish Enterprise (Svenskt Näringsliv) have provided guidelines for internal audit and control. They argue: 'The framework that has been mostly adopted, is internationally established, and hold a distinguished position is the COSO (1992) integrated framework' (FAR SRS and the Confederation of Swedish Enterprise, 2008, p 9).

To conclude, I believe that business activities with operational risk management and enterprise risk management are likely to enhance but also become more coherent in the future. Best practices, and normative guidelines are likely to be developed further. As has been the case in the US and other countries, I believe that formal rules and regulations will be further developed in Sweden, which will increasingly affect the management of a broader scope of corporate risks. Moreover, due to the international character of the insurance industry and the accounting industry, best practices and guidelines are likely to coincide.

Many stakeholders are likely to take part in this development, and certainly also scholars. Admittedly, this thesis does not cover all aspects of operational risk management, and as declared in the introductory sections, it is limited to a Swedish context. However, many of the results presented in the empirical studies are of interest also from an international perspective. Moreover, I believe that the industry may benefit from many findings from risk research conducted outside the industry. As shown in this introductory chapter, and as will be shown in the following, there is much academic research into factors such as risk perceptions (Study I), risk communication (Study I), decision-making, risk and trust, risk regulation (Study I, II and III) that has significant importance also for business organizations. Such research, is a great mine of knowledge to dig from.

In line with the opinions expressed by Smallman (2000b), I believe that research on operational risk and operational risk management has the potential to tie together research that relates to a broad range of business activities; such as human resource management, performance assessment, operations management, brand image and reputation risk management, environmental risk management, contingency planning, and more. Without a doubt, I believe it is a highly intriguing field, on which I hope to conduct more research in the future.

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ARTICLE

The Role of Risk in Corporate Value: A Case Study of the ABB Asbestos Litigation

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ABSTRACT The need for fair risk communication has emerged as a result of a more global and more flexible economy as well as of a media dominated world. Proper risk management and risk communication is therefore crucial today. The paper discusses the need for open and direct communication with the public in order to establish trust and to maintain market value. The case discussed is that of ABB (Asea Brown Boveri) asbestos litigation and the dramatic consequences it had for the company. During 2001 and 2002, the ABB share price fell by roughly 90 percent. The present study indicates that more than 50 percent of the fall was related to asbestos reporting by the media and ABB, primarily during the second half of 2002. The need for further understanding of and procedures for dealing with risks and risk communication in a business context is stressed. The outcome for ABB could have been different if more precise and defined ways of working with and communicating risks had been employed. Due to the asbestos crisis and the dramatic fall in ABB share price, ABB has implemented more structured operational risk management tools and displays a more outspoken awareness of environmental and social risk factors. This new strategy has emerged mainly as a result of an increased work with sustainability issues and a shift from a consensual/technocratic risk approach to a more deliberative mode of risk management.

KEY WORDS: Risk communication, risk management, operational risk, corporate value, sustainable development, trust, asbestos

Introduction

Over the past few years there have been an unprecedented number of business "scandals". To some extent, it is possible to view them as the result

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of a failure to manage risk successfully. In some cases, they are the result of possibly criminal activity where the management has tried to conceal the course of events, e.g., recent cases involving Enron in the USA and Skandia in Sweden. In other cases, they are the result of lack of routines, control, and a widespread "laissez-faire" attitude. Frequently, the results are due to erroneous (or previously considered reasonable) decisions taken by others. One clear example is the problem that ABB faced with the asbestos litigation in the USA.

Background and Impact of Asbestos Litigation

Asbestos has been the cause of major litigation problems in the USA. The Asbestos Alliance provides a picture of the magnitude of the asbestos-related problems in the USA (www.asbestossolution.org). The Asbestos Alliance is a collaborative organization of different parties with the common goal of finding a political solution to the increasing numbers of asbestos-related claims. The Asbestos Alliance state on their homepage:

> An estimated 200,000 asbestos claims are pending in state and Federal courts across the USA (2002). The total number of claims filed from the onset of asbestos litigation exceeds 730,000 (Carroll et al., 2002). Filings have increased dramatically, with more than 90,000 in 2001, compared to 20,000 in the early part of the decade. It is estimated that as many as one to three million claims could be filed before the litigation ends. Calculations project that the total cost of settlements ultimately could reach $265 billion.

According to the Asbestos Alliance, there are several structural faults that contribute to the extent of the problem:

Indefensible delays: An average asbestos trial takes 3 years compared to 18 months for an average court trial.

Clogged court dockets: The claims of those who are not sick clog the courts, and hinder the resolution of all civil cases.

No uniform medical criteria: There is currently no uniform standard to distinguish sick claimants from those who are not sick.

Financially burdened companies: The vast number of cases and high costs of defense strain the companies' ability to fairly compensate individuals who have or will be likely to develop illnesses.

Consolidation of cases and venue shopping: When cases are consolidated, it means that those with cancer or other sicknesses and even those who are not sick may be mixed together into a single case.

In a study by Nobel laureate Joseph E. Stiglitz, Jonathan M. Orszag, and Peter R. Orszag (2002) it is estimated that asbestos bankruptcies have cost

nearly 60,000 workers their jobs (until October 2002). Employees' retirement funds have been reduced by 25%. They conclude that:

> The current system for handling the asbestos claims imposes significant costs on the workers (and shareholders) of the defendant firms. Since many of these firms were not asbestos manufacturers, the costs imposed on workers (and shareholders) may seem unfair and inefficient from an economic perspective. (Stiglitz *et al.*, 2002, p. 4)

A common finding in the literature is that the mere threat of bankruptcy has a severe effect on the valuation of a company (Altman, 1984). According to that same study, a company under threat of bankruptcy underperforms heavily compared to index and industry control groups. Without doubt, asbestos has been a common reason for bankruptcy over the last few years. White (2004) updated the findings in a RAND study by Carroll *et al.* (2002) and stated that 85 corporations had filed for bankruptcy and that many insurance companies had financial problems due to asbestos litigation. Several studies stress the impact of asbestos litigation on the valuation of companies (see e.g., Lehman Brothers, 2002; White, 2004; Stiglitz *et al.*, 2002; Carroll *et al.*, 2002). In the lack of a proper legislative solution, many companies have lately developed individual solutions to mitigate risk, combining insurance, corporate restructurings and more stringent injury requirements in order to reduce frivolous claims (Lehman Brothers, 2002, p. 31).

However, even though there are possibilities to mitigate risk "the only generally recognized legal vehicle that is currently available for imposing *finality* on a defendant's asbestos liability is bankruptcy" (McGovern, 2002). Therefore, from a shareholder perspective, an asbestos litigation must be seen as a significant risk that might ultimately make his or her investment worthless.

ABB and Asbestos Litigation

ABB (Asea Brown Boveri Ltd) was formed in 1988 by a merger between the Swedish power technology supplier ASEA and its Swiss counterpart Brown Boveri & Cie. ABB is today one of the world's leading companies in power and automation technologies. The ABB group of companies employs around 105,000 people and is represented in roughly 100 countries.

During the last few years, the company has transformed and consolidated its businesses and now focuses on power and automation technologies. Former businesses such as nuclear power, power generation, rail, and financial services have been sold between 1999 and 2002. The company's oil, gas, and petrochemicals divisions were sold in July 2004. For more information on ABB, see www.abb.com.

The company has been affected greatly by the business ethics, environmental responsibility, and business decisions of former subsidiaries. For ABB, this is manifested most clearly by the purchase of Combustion

Engineering (CE) in 1990, which has contributed largely to the recent problems of the company. The consequences for ABB have been disproportionately large, for employees, shareholders, retirement funds, etc., considering the initial health risk that the former subsidiary exposed their employees to. Over the past years more than 400,000 people have claimed damages from CE and ABB. Between 1990 and February 2003, US $1.1 billion were paid to claimants in the USA and the newly approved pre-packaged bankruptcy plan (plan of reorganization) costs ABB an additional US $1.43 billion. (ABB, press releases, 11/01/2002, 02/17/2003, and 04/01/2006). When the crisis peaked in October 2002, ABB share price fell by more than 70 percent. During the period of the first quarter of 2001 until the last quarter of 2002, the ABB share price fell by nearly 90 percent.

In hindsight, it is clear that risks associated with asbestos claims were underestimated greatly by ABB. ABB worked analytically and rationally with a set of scenario analyses and models in order to calculate the extent of possible damage claims. The consequences of the summons for ABB could rather easily have been calculated and limited but the situation changed with a precedent verdict in the USA in 1997. Previously, litigation was based on whether employees had actually become ill due to contact with asbestos. According to the 1997 verdict, the judicial and moral responsibility was based on whether employees had been exposed to any kind of risk from asbestos at all.

As a result of the increasing number of litigations concerning personal health, and especially asbestos injury cases, Corn (2003) argued that there is a need for a better understanding of risk assessment in the courtroom. Viscusi (1996) stressed that asbestos is one of the most regulated and costly risks ($100 million/prevented case of cancer), and that there is a need for better risk communication in order to decrease the perceived risk of asbestos. In a way, the biased risk perception concerning asbestos is a contributing factor to the catastrophic outcomes for ABB and other corporations, for the US legal system and for employees.

According to ABB, asbestos litigation problems were previously very limited.[1] During the early 1990s, ABB considered their control and readiness for upcoming demands by previous employees to be very good. ABB (including CE and other subsidiaries) ceased to use asbestos in their production as early as 1972. Therefore, the financial risk was considered rather limited. The company had also developed actuarial models for how many claims were likely to arise due to asbestos-related diseases. Possible claims were covered by company insurance and the employees' health insurance.

During the mid-1990s, however, the situation started to change, mainly due to the shift in attitudes towards litigation in the USA. The courts started to open up to the possibility that a lawsuit was legitimate based on mere exposure to asbestos. In June 1997, there was a landmark asbestos settlement (Stiglitz *et al.*, 2002). The verdict in 1997 paved the way for a

[1] According to ABB spokesman, Thomas Schmidt, interviewed February 2004.

completely new type of lawsuit. This did not affect merely ABB, but many other large global corporations, such as Honeywell, Dupont, GE, and Daimler Chrysler.

Seemingly, ABB did not understand the extent of the problem until rather late. Besides individual healthcare insurance for their employees and corporate insurance, CE had made a reservation of several hundred million dollars for payouts related to asbestos claims. The models CE used, based on actuarial data as well as industry and legal trends, suggested that the reserves were sufficient. As late as 1999, ABB did not feel threatened (at least not officially) by the rising number of asbestos lawsuits in the USA. As stated by ABB: "All companies in this business had used asbestos in their production in one way or another". The risk was not considered a specific business risk for ABB. In this way, the problem was underestimated by ABB for a long time.

By the end of the 1990s, the amount of litigation towards companies in the USA was increasing at a fast pace. An interesting implication for the present study is that the claims did not follow a set pattern. There was clearly an upward trend and the "peaks" came as the result of other successful and salient verdicts. Not surprisingly, the strong increase in claims is associated strongly with the increase in total outlays (Carroll *et al.*, 2002; Stiglitz *et al.*, 2002).

Risk Communication

In a previous study by Kallenberg (2002), risk communication of three public companies (Skanska, ABB, and Ericsson) was studied based on their annual reports. The basic hypothesis was that the companies' risk awareness, analysis, and work with risks had increased over time and that this was reflected in their annual reports. During the period 1987 to 2001, this was clearly the case. Previously "hidden" and only implicitly communicated risks became more and more explicit.

In the early 1990s risks were not mentioned to a great extent, but rather identified as areas of problems that would possibly affect the business in a negative way. Examples were credit costs, international economic growth (inflation, interest rate), and regulations (state interventions concerning the telecom industry). In 2001, the companies displayed an outspoken ambition to communicate clearly factors of risk as risks. Good awareness and a "plan of action" concerning risks were communicated as a competitive advantage and therefore, implicitly, also an important factor in the valuation of the companies.

As shown in Figure 1, the trend for explicitly declared risk awareness and risk communication is clear. It should be mentioned here that, in the diagram, the year 1987 brought with it heavy decline in project exports, credit risk, and currency exchange risk (particularly so for the Swedish construction company, Skanska). The study might serve as an example of a

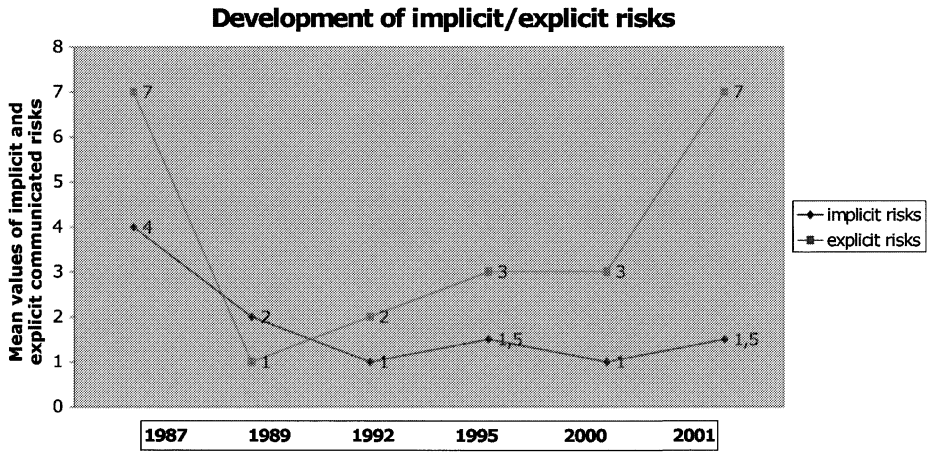

Figure 1. Development of implicit/explicit risks

development where a structured and well-defined strategy for dealing with risks and risk communication can be seen as a competitive advantage.

Social Amplification of Risk

According to communication theory, amplification is an important process of intensifying or attenuating signals during the transmission of information (De Fleur, 1966). The basis of the social amplification of risk framework (SARF) is that a technical concept of risk is not sufficient, too narrow, and ambiguous to serve as a yardstick for policy-making. The framework has evolved from the need of an integrative theory that captures the complex relationships between risk, risk analysis, social response and socioeconomic effects of risk (Kasperson *et al.*, 1988, p. 179). The scientific base is that risk is not merely objective or subjective but rather a combination of the two. SARF rests upon the argument that the risk-bearing event is amplified via various "stations" (e.g., news media, scientists, risk managers, and institutions) via various "communication channels" (e.g., media, direct conversation). The amplifications lead to various (new) responses in behavior and perceptions of risk that in turn generate secondary impacts (ripple effects). Examples of secondary impacts are changes in attitudes, regulation, consumer punishment of risky products, increased liability and insurance costs etc. (Pidgeon, Kasperson and Slovic, 2003; Kasperson *et al.*, 1988). SARF involves analysis and evaluation of information processes, institutional structures, social and group behavior and individual responses.

In the present study, the most important factors contributing to the developments in ABB and ABB share price are the information processes (the media) and the institutional settings, in this case, the workings of the American legal system. However organizational responses and decreased

trust for ABB management also played a very important role in the conceptualization of the perceived risk regarding ABB.

The original risk-bearing event in the ABB case was the use of asbestos by CE and other subsidiaries. In the present study the major risk of interest is the perceived risk of asbestos issues on ABB and ABB share price. The perception of risk regarding the impact of asbestos issues was amplified mainly via the media and the institutional settings (the American judicial system), and was interpreted and further amplified by group and individual responses. The impacts expected according to SARF are loss of business, financial losses, regulatory constraints, organizational changes, litigation, increase or decrease of physical risk, sabotage or terrorism, and loss of confidence in institutions. (Kasperson *et al.*, 1988; Slovic, 2000, chap. 14; Pidgeon *et al.*, 2003) All these factors were relevant in the ABB case, except sabotage and terrorism.

It is essential to stress that the perception of risk which affected the valuation of ABB was a mixture of "real" risks, such as a downturn in sales or an increased number of asbestos plaintiffs, but also a subjective perception of risk, due to media reporting, lack of confidence for ABB management or negative outcomes for other companies in the business.

Institutional Settings

SARF implies that one of the contributing factors to the perception and attitude towards risk is that of institutional settings (Kasperson *et al.*, 1988; Pidgeon *et al.*, 2003). When discussing asbestos litigation in the USA, one can clearly establish a connection between the workings of the legal system and the development of the asbestos issue. A search on the Internet on the word "asbestos" using a search engine, such as "Google", results in links to hundreds of law firms and associations who are willing to deal with asbestos cases.

Asbestos litigation has, since the 1980s, become a billion dollar industry. The number of people that, in one way or another, have been in contact with asbestos is enormous. Clearly, law firms and lawyers have been significant driving forces in the development of the issue[2] (White, 2004; Carroll *et al.*, 2002; Behrens, 2002). According to numerous sources (e.g., Lehman Brothers, 2002; White, 2004; McGovern, 2002) some lawyers are using highly questionable coercive tactics in order to enrich themselves. Examples of this might be: forum-shopping (selection of favourable state courts), new techniques for mass processing of claims, and substitution of defendants when old went bankrupt (White, 2004, p. 6).

[2] According to an article in a leading Swedish newspaper, Dagens Nyheter, on October 9, 2002, lawyers sought actively potentially profitable cases. "The lawsuits have slowly but surely been transformed to enrich the hordes of fee-demanding lawyers rather than those who are sick. The situation appears practically hopeless". In West Virginia, during 2001, 75% of all legal cases were, in one way or another, connected to asbestos-related issues.

Historically, the asbestos litigation has developed in three waves. The first wave concerned former employees in asbestos manufacturing companies who had fallen ill after direct contact with asbestos. The second wave of lawsuits concerned construction firms who had used asbestos for insulation. The third[3] wave developed as a consequence of the precedent verdict concerning Amchem Products in June 1997 (Stiglitz *et al.*, 2002). That verdict opened up a virtual goldmine for the lawyers.

The way the issue was dealt with in the courts also contributed to the problem and to the amplification of the risks for the involved parties. Overloaded courts and very lengthy trials clearly contributed to the reinforcement and amplification of the risks for ABB. Possible claims for damages became very uncertain, both in terms of number and value, something that led to a tremendous financial risk for ABB as a whole.

A further catalyst in the ABB case was that the increased uncertainty of the asbestos litigation affected strongly ABB credit ratings. By the end of 2002, ABB stock was awarded junk status, Ba2. This meant, in practice, that it was difficult and expensive to secure new loans or to alter existing loans. This, in turn, led to speculation by analysts, journalists and others, that ABB had major solvency problems and that the company was at risk of going bankrupt or at least needed to raise new capital through the issuing of new shares. This actually occurred in November 2003.

Information Processes - The Media

SARF gives an important role to the media in the amplification of the perception of risk. According to the theory, media help to create a perception of a risk that, in many cases, differs from reality. The media both intensifies and weakens risk information signals and also filters the multitude of signals with respect to the risk attributes and importance (Kasperson *et al.*, 1988; Pidgeon *et al.*, 2003). An extensive amount of research has shown that peoples' perceptions of risk are often inaccurate, especially when it comes to risks concerning e.g. cancer and dramatic causes of death (Morgan *et al.*, 1985; Lichtenstein *et al.*, 1978). Combs and Slovic (1979) have also found news media coverage of hazards to be biased in much the same way.

A search on ABB in the Swedish media database, *Affärsdata*, gave more than 50 000 hits. A search on "ABB and asbestos" gave roughly 2200 articles. One hundred and sixty-five of these were published in 2001 and over 900 in 2002. The interest in writing about ABB and its problems with asbestos litigation increased sharply during the investigated period of time. Articles mentioning asbestos in the title increased mainly during the second half of 2002. During 2001, the main interest and focus in media was related mostly to other business problems, and asbestos-related reporting was given low priority.

[3] The fourth wave according to Stiglitz *et al.* 2002.

An important issue for the present study was to determine the extent to which the asbestos-related issues contributed to the fall in the share price. The increased risk due to the asbestos litigation implied a whole set of new risks. One example of which are financial risks, which in turn led to a lowered credit rating that affected the entire company. These risk diversification and amplification effects led to a difficulty in clearly defining the role of the asbestos litigation as the driving force in the sharp fall in the share price. Furthermore, between 2001 and the second half of 2002, practically all world stock exchange indexes fell dramatically. Yet, ABB stock fell much more than the average.[4] Other aspects that might have contributed to the fall in the ABB share price are some criticized strategic mistakes in the latter part of the 1990s. Clearly, ABB, as many others, had positioned itself as a company in "the new economy", where information technology was seen as the way to increase profits. However, the IT-crash and the following heavy decline in the value of IT-related shares, contributed to the "fuzziness" and uncertainty of what constituted the ABB core business. Another reason for the difficulties in defining and characterizing ABB might have been the major restructuring of the company that the former CEO Jörgen Centerman initiated in January 2001. A program for the repurchasing of own stock for 1.5 billion dollars was initiated, as was later found, the stocks were heavily overpriced. This overpricing contributed to the reduction in own capital, which must be seen as a major strategic mistake. Following these developments, the financial situation for ABB became very tense.

In the following, an attempt is made to trace the development of the ABB share price and relate it to significant asbestos related events.

Tracking the ABB Share Price

In order to be able to determine to what extent the asbestos litigation and media reporting was the driving force in the ABB share price decline, the following method was used.

Firstly, the average turnover of stock (volume per day) was calculated during all the trading days in the period 01/01/2001–12/31/2002. The result was an average turnover volume of roughly 260,000 before the split (4:1, 05/07/2001) and a daily average turnover volume of 4.1 million shares after the split. The average trading volume gives a good picture of trading days that were particularly intense and therefore interesting to focus on (see Figure 2).

The diagram displays that the daily stock turnover increased sharply during the period. Furthermore, the number of unusually active trading days seems to have increased over time. These activity peaks are assumed to be the result of information that was received by the market.

[4] (2001; 2002): SAX- All Share, −16, 9%, −37%; DJIA, −7, 1%, −16%, NASDAQ, −21%, −30%, ABB, −57%, −75%.

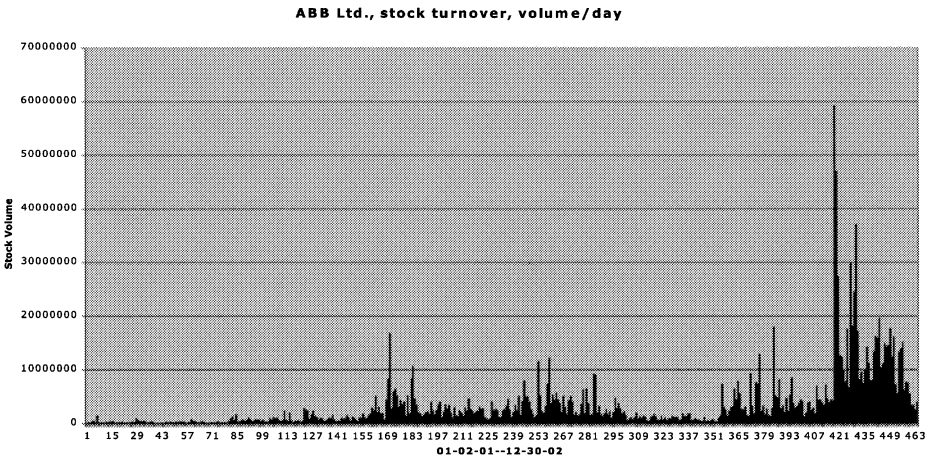

Figure 2. ABB Ltd., stock turnover, volume/day

In order to further identify what dates were of interest for analysis, trading days with high share price volatility was identified. Then, the daily turnover volume data was combined with the share price volatility data, resulting in 35 peaks (dates) of particular interest. These peaks often extended over 2–4 days, characterized by high stock turnover volume and high share price volatility.

The 35 identified peaks were used as a starting point in the media archives search (*Mediearkivet* and *Affärsdata*). These particular media archives were selected because they reflect what has been written in different Swedish media (mainly newspapers). An assumption was made that events and statements of a certain magnitude, which may have had an abnormal impact on the share price and turnover volume, were referred to or published in Swedish media.

Six different areas of reports dominated the media coverage of the crisis for ABB:

1. The downturn in the market, declining order intake for ABB.
2. Too high costs and overheads, reorganization, workforce cuts.
3. Financial crisis, low solvency, risk for new capital issues, profit warnings, disappointing reports.
4. Asbestos litigation, withholding of information, risk of bankruptcy.
5. Denial of asbestos problems, positive analysis on asbestos issues.
6. Positive reports on sales, progress of reorganization program, ownership issues.

In Figure 3, the 35 peaks are displayed by magnitude, Table 1 indicates a summarized three-day share price movement and identified "driving force" (1–6 above) of the movement. Number zero (0) indicates recoil of ABB share price, or general movement with a recoiling market.

During the first half of 2001, the decline in the value of ABB stock was driven by the decline in the market at large. In January 2001, the management

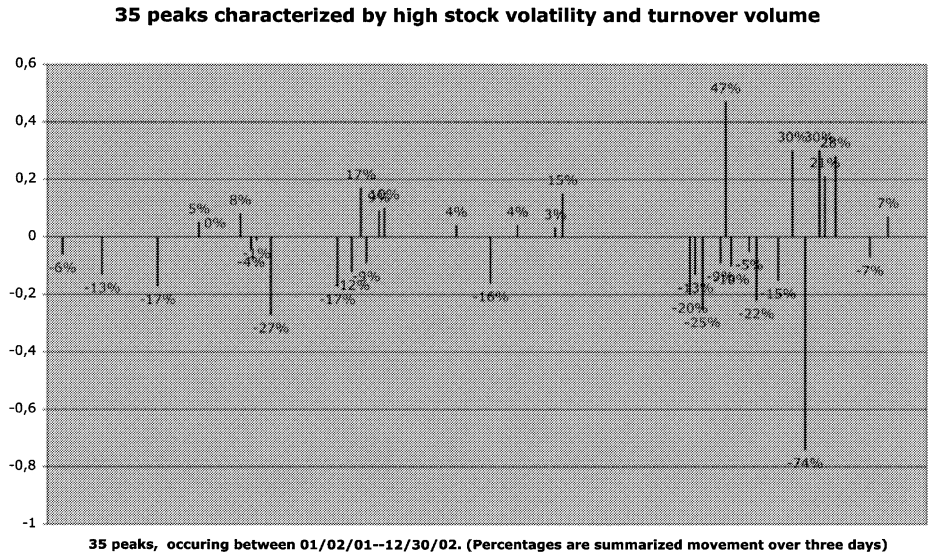

Figure 3. 35 Peaks characterized by high stock volatility and turnover volume

of ABB was forced to announce cuts due to the inconsistency between the size of ABB and the market demand for its products and services.

In April 2001, for the first time, the stock fell heavily as a result of anxiety about how ABB was handling the asbestos issue. On April 2, Deutsche Bank published a severe criticism of the ABB financial situation and future prospects. The main message was that the reserved funds for the ongoing asbestos claims would not be sufficient. The media began to write about a lack of trust, and "skeletons in the closet". ABB responded by saying that the reserved funds would be sufficient (e.g., Dagens Industri, 04/03/2001). Information about the reserved funds was available to the public because ABB had been forced to adapt their accounting to American GAAP standards before becoming listed on the US stock exchange on April 6, 2001.

In July 2001, the market was shocked by a surprisingly bad second quarter report, a recruitment freeze and the announcement that 12,000 employees would be made redundant. The Swedish newspaper *Dagens Industri* wrote about "the drowsy ABB management being taken by surprise" (Dagens Industri, 07/25/2001). The ABB share price fell by over 50 percent. Several competitors, such as Emerson Electrics, issued profit warnings, which accelerated the fall in stock.

There were still no comments from ABB on the asbestos issue, nor any communications to the public that this was a major problem. The management admitted that the costs for the claims were rising but that "as far as we can see, we are protected" and that "we will update the market once a year if nothing dramatic occurs" (www.EK24.se, now www.afv24.se, 07/24/2001).

Table 1. Summarized share price movements and "driving factors"

Date	Summarized price movement	"Driving factor" according to p. 10
01/11/01	−6%	1
02/13/01	−13%	3
04/02/01	−17%	4
05/18/01	5%	0
16/05/01	0%	2
06/28/01	8%	6
07/06/01	−4%	0; 6
07/11/01	−1%	2; 3
07/24/01	−27%	2; 3
09/18/01	−17%	1; 3
10/01/01	−12%	3
10/09/01	17%	2; 4
10/12/01	−9%	1
10/23/01	9%	5; 6
10/26/01	10%	6
01/31/02	−16%	3; 4
02/22/02	4%	3
03/26/02	3%	3
04/03/02	15%	0
07/23/02	−20%	1; 3
07/26/02	−13%	4; 3
08/01/02	−25%	4; 3
08/16/02	−9%	3
08/21/02	47%	0; 5; 6
08/26/02	−10%	0
09/09/02	−5%	4
09/13/02	−22%	4
10/01/02	−15%	3; 4
10/11/02	30%	0
10/22/02	−74%	4; 3
11/01/02	30%	4
11/06/02	21%	5
11/14/02	28%	5
12/11/02	−7%	4
12/30/02	7%	0; 5

From a market point of view, the demand for more precise and clear communications was rising. Criticism arose on the difficulties making a "review" of the company. A vivid example of this might be the statement made by former president Jörgen Centerman "our company is a black box" (Dagens Industri, 07/25/2001).

After September 11, 2001, the anxiety about a further downturn in the world economy increased and various rumors about ABB's solvency and financial problems surfaced. The media wrote about possible ABB profit

warnings and began writing about possible new capital issues. Increased costs of credits and loans were the inevitable effect of lowered credit ratings.

It was on September 19, 2001, that ABB took the criticism of insufficient information into account for the first time and published an update of the asbestos litigation situation, including previously withheld information. ABB also stated that they had the ambition to improve communication about risks and other information to the media and the shareholders. The quarterly report in October 2001 revealed the intention of the management to be more precise and, in the report, ABB communicated that the asbestos claims were in line with previous prognoses. ABB was negatively affected by the fact that several companies in the USA applied for protection under chapter 11, e.g., Federal Mogul. By the end of 2001, the then chairman of ABB, Percy Barnevik resigned which resulted in a 3% upswing of stock price. In December 2001, the company was further affected by developments in the USA involving the global oil corporation Halliburton, which was ordered to pay record damages.

In January 2002, a new US law concerning the limitation of possible asbestos claims was a positive development for ABB (*Dagens Nyheter* and *Dagens Industri*, 2002). However, this was a short period of relief for ABB, and in February 2002, the company announced that they saw a rising number of claims and had to reserve an additional $470 million in funds.

Furthermore, in February 2002, the size of Percy Barnevik's pension insurance was revealed and criticized strongly.[5] This further eroded public confidence in the company and, once again, management's judgment was questioned. A financial crisis emerged in March when ABB had difficulties in renegotiating their loans. This problem was solved by April. A temporary recovery of the stock can be attributed to statements about a brighter outlook for the global economy in general and, for ABB, a rather positive quarterly report and seemingly stable numbers of asbestos claims.

In July, this temporary optimism seemed to have vanished and the media renewed its criticism with statements such as: "ABB to fall due to asbestos litigation" (Dagens Nyheter, 07/25/2002). During two very critical days in October, the stock fell by roughly 70%. The costs of the claims now exceeded CE's assets. ABB considered filing for bankruptcy for CE and for protection under Chapter 11. Rumors about the need for a new issuing of capital appeared and voices were raised in favor of political intervention. *Dagens Industri* wrote on October 23, 2002: "The black hole is opening". Many newspapers stated that the lack of information had created a crisis of confidence.

Towards the end of the year, ABB continued the restructuring of the company by reducing the number of employees by 50,000. From a previous 150,000 employees worldwide, the company now had 100,000.

[5] On February 14, 2002 ABB announced that former President Percy Barnevik had received 100 million Euros in pension insurance. The reactions were intense and Percy Barnevik had to leave several of his assignments, e.g. as the chairman of the Swedish company *Investor*. The issue led to a wider discussion on bonuses, business ethics, moral, and trust. The issue further diminished the trust and confidence for ABB's management and board.

However, in the beginning of 2003, a possible solution to the asbestos problems could be discerned. At the beginning of 2003, ABB filed for protection under Chapter 11. The application concerned both CE and several other subsidiaries. The Chapter 11 filing protected the parent company from further claims, which were to be handled by a special fund (Injunction 5:24 G). On February 17, a majority (99%) of the claimants accepted the prepackaged bankruptcy plan. There was a rush on ABB stock (+19%).

During the period of investigation, the volatility of the stock increased over the investigated period sharply. Even though this key ratio is rather simplistic, it gives a clear picture of how the fluctuations increased and, thereby, how trading in the ABB stock became much more risky (see Figure 4).

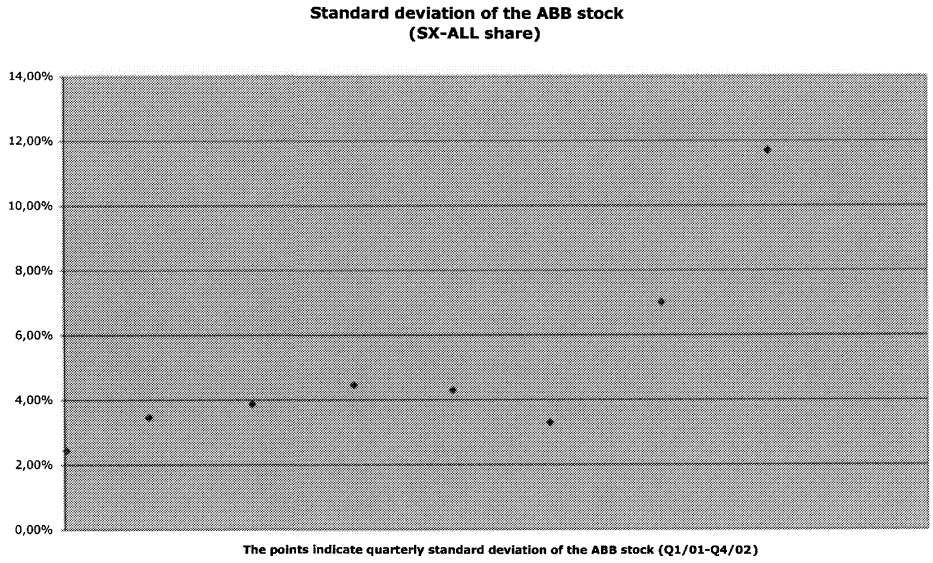

Figure 4. Standard deviation of the ABB stock (SX-ALL share)

ABB's Comments

The results of the analysis of the media reporting of ABB during the period are in line with the analysis by ABB themselves.[6] The company agrees that:

[6] "It was a combination of various factors and a timing issue. Besides the unforeseeable dynamics of the US litigation system, the disclosure of asbestos coincided with other company specific issues, such as the low equity base and deteriorating operational performance during the recession of 2000–2001, in important markets such as North America and Western Europe, and a sharp contraction in the credit and bond markets in available short term financing. At the same time, the company switched its accounting system, changed its top management and reorganized the company radically. As a result, the company was a "black box" at a time when comparability and credibility were decisive factors for investors and creditors" (Thomas Schmidt, ABB spokesman, interviewed February 2004).

"the asbestos issue has been, by far, the most crucial risk for the company to handle". A problem for ABB was that, for a long time, they did not know how significant the litigation would be: "The development was not foreseeable". According to ABB, the company attempted to make forecasts, with help of "available insurance models, industry data, and historical patterns". The insecurity within the company was great since the decisions were, to a great extent, to be taken outside the company. ABB stated that this is natural since "the dynamics of the legal environment are unforeseeable". This internal insecurity and anxiety was, for a long time, kept secret and it was not until the SEC filings in April 2001 that the company started to communicate this risk to the public. In other words, they chose to keep this information secret until it had to be communicated due to US law. This could be considered a mistake since the media discovered the information anyway and wrote about it as something that ABB tried to keep secret from the public and shareholders. According to ABB, there was controversy regarding this matter and the risk had not been communicated in a precise manner because some managers thought that the information could have been misinterpreted and would have been "harmful for the company". ABB suggest that a reason for the controversy and their slowness of reaction might have been that "the costs were not significant for ABB until the end of the nineties".

The reaction to this concealed information did not wait. Critical comments on ABB and the subsequent fall in share price were probably due largely to the handling of this matter. In hindsight, ABB has concluded that it would have been better to communicate the risk and the magnitude of the asbestos claims, in order to show the public that the company prioritized the issue and had a plan of action to solve it. This would have clearly reduced the uncertainty and various speculations. According to ABB, the media cannot be blamed for the reporting of the asbestos issue. Even without the media, it would have been a huge problem to solve.

However, ABB do stress that the media, to some extent, contributed to the dynamics of ABB's problems by overemphasizing the worst-case scenario.

Conclusions

According to the social amplification of risk framework (SARF), external factors such as information processes, institutional settings and structures affect and amplify the perception of risk. An objectively assessed minor risk might be amplified or attenuated through various ripple effects, generating secondary and some times also third order impacts. The impacts expected according to SARF are broadly: loss of business, financial losses, regulatory constraints, organizational changes, litigation, increase or decrease of physical risk, sabotage or terrorism, and loss of confidence in institutions. As described early in this paper, the main scopes of interest are the impacts generated by the media and the institutional settings of the American legal

system. However, organizational and managerial mistakes also accounted for a great deal of secondary and third order impacts that affected ABB. As stressed before, all the impacts mentioned above were relevant in the ABB case, except for sabotage and terrorism.

Loss of business due to mistrust in management, and heavy reorganizations due to a more difficult financial situation seems to be an obvious secondary impact emerging from the handling of the asbestos issue.

Financial losses emerged from actual costs from handling the asbestos litigation, increasing asbestos claims, decreasing sales, but also to a great extent from lowered credit ratings.

Regulatory constraints but also lack thereof has increased the risk for all companies that have used asbestos in one way or the other. This also applies to ABB and has been an important reason for the disastrous way the asbestos *litigation* developed. The overall focus on the employees, rather than the companies, clearly increased the business risk without actually improving the situation for those who were genuinely sick (increasing *physical risk*). Much of critiques rest upon this regulative and governmental mishandling of the issue.

Organizational change has been an important outcome of the ABB asbestos litigation since one important driving force behind the sharp fall in the value of ABB was the insufficient internal risk management and risk communication of the asbestos issue. According to ABB, there were people within the company who thought that an outspoken strategy to inform about the asbestos issue would have done more harm than good. This has proven to be a very incorrect assumption. The dearly bought experience for ABB has led to a general change in risk management within the company. As ABB now states: "For the top management, risk management is now a very important task". Operational risk management is for ABB today a very central task that affects decision-making and strategic planning to a great extent. The company is today much more attentive to different events that might lead to different kinds of risks in the future. ABB aims to identify problems at an early stage, to communicate them and to solve them. This new way of working with risks within ABB has also been stressed by former CEO Jürgen Dorman. One problem that has risen with this new awareness and strategic work with risks is the matter of prioritizing. A profit-driven company cannot avoid all risks. It is essential to identify precisely what areas of risks ought to be given priority. The matter of prioritizing and risk mitigation is crucial and ABB now uses a more deliberative mode of risk management where various stakeholders are invited to contribute to and discuss different risk and sustainability issues. This mode of risk management is becoming more popular in corporate settings but it has its flaws. However, Löfstedt (2005) stresses that the deliberative strategy in risk management might be suitable in a low-trust/high uncertainty situation, which was clearly the case for ABB in 2001.

Much of the work with business, environmental, and social (e.g., human rights, work safety regulation, health care, and child labor) risk management

is now handled and initiated by the corporate function *Sustainability Affairs*. Clearly, sustainability efforts within ABB and other corporations are a fairly new phenomenon, with ABB publishing its first sustainability report in year 2000. In 2002, for the first time, the sustainable report also included social considerations and had grown extensively in scope.

The ABB crisis was severe and substantial during many years. From a risk management/communications perspective, the company clearly underestimated the impact of the media and the potential benefit of clear and precise communications to the public. A CEO that compares his company to "a black box", recurrent criticism of deficient review procedures, and insufficient communication to the media and shareholders are problems that clearly have to be attributed to ABB and its management. These problems reinforced and amplified the perception of a company in deep crisis. The way that ABB handled and communicated the risk related to the asbestos litigation further contributed to the negative outcome and lack of public trust for ABB.

In the case of ABB, it is clear that institutional circumstances were a driving force in the reinforcement of the risk to the company. Throughout the present study, it is apparent that the US judicial system and the lawyers further contributed to making the issue so crucial and the problems so severe.

Media reporting of the course of events seems to have been rather accurate, even if ABB itself stated that media has a preference to report on negative rather than on positive events. An example of this might be the very notable case of the former chairman Percy Barnevik's pension insurance, which probably contributed to the fall in public confidence and trust for ABB and its management.

ABB speaks of a "negative bias" in media reporting about the company, due to a general lack of confidence in the company. It is hard to define in what way this alleged negative bias contributed to the general view of ABB and reporting on the company. During the two years covered by this study, there were two major analyses of ABB that had a great impact internationally (*Deutsche Bank,* 04/02/2001 and *Financial Times,* 09/09/2002). The lack of proper risk communication from ABB to the media and shareholders is likely to have contributed to the risk perception and trustworthiness of the company in general. Therefore, it is also likely that inadequate risk communication had a great impact on share price.

In the beginning of this paper, I discussed the valuation of ABB and whether the fall in share price was fair and motivated. The value of a public company is set by the market value of its share price. If this value is right or wrong in relation to so-called "fundamental values", is often very hard to establish. This is why accurate information and communication is essential in defining a fair share price. In the case of ABB, the fall in share price was to a great extent driven by asbestos related issues. More than 50 percent of the total fall in ABB share price can be assigned asbestos related issues and media reporting. Asbestos was of crucial and significant importance for

sixteen of the 35 identified peaks (46%). Furthermore, the fall in share price was accelerated by increased insecurity and anxiety about a company which seemed to have lost control of crucial risk factors, and was affected largely by external factors. From this point of view, the valuation of the company as being close to bankruptcy was, in a way, correct and fair. The risk in the stock was, during these months, extremely high with a volatility of over 10 percent and it was not until February 2003, when ABB reached a settlement under chapter 11, that a more accurate value of the ABB stock could be set.

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Operational risk management in Swedish industry: Emergence of a new risk paradigm?

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ABSTRACT

In recent years, a vast number of regulators and normative guidelines have suggested new approaches to managing risk in corporate settings. Emphasis has been on strategies for managing operational risk and the benefits of a more integrated approach to the overall risks affecting a company. However, it is unclear whether these 'new' approaches to risk management have been accepted and implemented by the industry. Based on interviews with 20 experienced chief risk officers working in Swedish industry, this explorative study aims at investigating and analyzing current opinions and considerations on the implementation of operational risk management (ORM). The development towards more integrated risk management approaches as proposed in Enterprise Risk Management (ERM) is also in focus. The results of the interviews indicate that the Swedish industry approach to ORM is today rarely a strictly formalized, straightforward activity. Instead informal, decentralized, pragmatic, bottom-up approaches to ORM are preferred over an ERM approach to overall risk exposures. The respondents stressed that their companies' activities with ORM had been guided by the Swedish regulatory (precautionary) approach, notably regarding environmental and occupational risk. Stakeholders such as the financial markets and insurers, as well as various guidelines and policy documents relating to corporate responsibility and corporate governance had further directed the development. However, as a result of stricter international regulation relating to ORM and ERM, it is likely that incentives for more formalized risk management approaches will emerge also in Sweden.

INTRODUCTION

All organizations are subject to various risks. The ability to properly assess and manage these risks is crucial for the survival and success of the organization. In the corporate sphere, risk analysis is hardly a novel undertaking, and of course the management of risk has always been an inherent part of business life. However, lately there has been growing recognition of the need for more formal, systematic approaches to overall corporate risk exposures. Stakeholders such as regulators, the insurance and accounting industry, shareholders, and the financial markets, have put pressure on corporations to manage their risks with more care. Since the early 2000s, there has been an increased focus on what has been defined as operational risk (EIU, 2007a,b; King, 2001; Smallman, 2000a; Ward, 2001). Such risks relate to negative deviations of performance due to how the company is operated, rather than the way it finances its

business (Jorion, 2006; King, 2001). Noteworthy examples of sources for operational risks are: interruption in business processes, fire, chemicals or other environmental hazards, poor workplace safety, inadequate maintenance of equipment and production facilities, employee incompetence, employee health problems, and corruption. These risks are of increasing importance for the overall risk exposures, and consequently, risk management of many companies. If mismanaged, the firm may suffer significant commercial damage or even bankruptcy (EIU, 2007a,b; Frost, 2001; Jallow et al, 2007; Jorion, 2006; Hussain, 2000; Smallman, 2000; Ward, 2001).

It has been argued that there is a great need for improvement in the quality (as regards tools and formal processes to manage operational risk) and scope (such as identification of what risks to focus on) of ORM. Companies frequently deal with operational risk issues as they occur, and often following a crisis or catastrophic event (King, 2001). In practice, in real industry settings, the formal and systematic approaches to ORM are new phenomena, and it has been argued that there is a need for improvement of these activities (Beaumont, 2007; CAS, 2003; Elliott et al, 2000; Ward, 2001). Despite broad recognition of the benefits of ORM, there is limited empirical evidence of whether ORM as a formalized activity has been implemented in reality, at least in a Swedish industrial setting. Admittedly, research on the management of various operational risks in Sweden, have been carried out in the past regarding factors like environmental risks, financial risks, occupational risks, IT risks, business continuity planning, operational safety management, physical risks, technical or process risks and more. However, searches in various literature databases showed that research on the formal organization of ORM activities in a broader Swedish industry setting is rare. [1]

In light of these circumstances, a question arises: How is ORM implemented and organized in practice? This broad research question motivates this study. The aim of which is to investigate and analyze current opinions and considerations of ORM among chief risk officers in Swedish industry. Hence, the main scope of this explorative study is to discuss the organization of ORM, as well as general development towards, drivers of, challenges with, and current industry trends regarding ORM.

[1] E.g. Science Direct, Business Source Premier, Libris, Regina (Search words: operational risk management, Sweden, Swedish, industry, operationell riskhantering, Sverige, svensk, industri).

Development of operational risk management

It has been argued that the predominant view of risk management as a financial activity is too narrow. It does not acknowledge all the possible risks that companies may be facing. As risks often concern failures of processes and techniques or flawed employee' risk assessment, the financial approach to risk management is not enough, or even, it is not an appropriate one (Elliott et al, 2000; Frost, 2001; Smallman, 2000a, 2000b; Ward, 2001). Thus, there is a need for risk management approaches that move beyond the financial, quantitative, and clear-cut conceptualization of risk as a prerequisite for gain and reward.

The management of operational risks is by no means a recent task for managers or companies. They have previously been monitored and managed in business activities relating to for example internal audit, environmental, insurance, or human resources departments (Ward, 2001). However, lately the idea has emerged that operational risks should be managed by a separate function, with its own risk strategies, tools, and processes (Davis, 2005; Smallman, 2000; Ward, 2001).

It has been argued that specific industry characteristics are likely to influence the types of risk that an organization is exposed to, and consequently tends to focus on (ISO, 2007; McCrae and Balthazar, 2000; Ward, 2001). However, in a general sense, ORM helps companies avoid unexpected losses, improve their operational efficiency, promote more efficient use of capital, satisfy stakeholders, and to comply with regulations (King, 2001). Largely based on ideas from risk research with focus on society relating to elements like nuclear power safety regulations, or environmental health and safety (e.g. US National Research Council, 1983),[2] the objectives and methods of ORM have been elaborated upon in a wide variety of guidelines relating to corporate governance, accounting, insurance, and others. In brief, the objectives of ORM are to identify risks, classify risks as controllable or uncontrollable, identify causes, provide measured feedback on risks, and relate them to management actions (King, 2001, p 48).

[2] The NRC provided a much important framework to systematic environmental risk analysis. The tools and steps of the framework has been extended to apply to e.g. ecological risk assessment, regulatory risk assessment, and policy analysis (e.g. US EPA, 1993). As a respons to risk controversies, and risk reserach results regarding risk perception, trust and risk communication, lately, more inclusive, deliberative modes of risk analysis has been promoted by the NRC (e.g. NRC, 1996).

The development towards more formal approaches to ORM has at large been directed by three interrelated circumstances. Firstly, a broad set of 'new' risks has emerged recently. These risks are due to factors such as increased dependence on IT, the accelerating pace of business, globalization, terrorism, deregulation as well as regulation of industries, increasing public exposure in the media, and attention from various non-governmental organizations (Anderson, 1999; CAS, 2003; ISO, 2007; Jüttner, 2005; Ward, 2001). For the companies, risks relating to these factors are crucial to manage, and have boosted more formal approaches. For example, the fears of the Y2K bug stimulated companies to improve the security and control of their IT systems. The events of 9/11 in 2001 introduced previously unconsidered risks with impact for companies' risk management strategies (Davis, 2005; EIU, 2007a; Gates and Hexter, 2005; Sjöberg, 2005).

Secondly, the evolving interest in, and demands for improved risk management and control systems have emerged as a result of numerous publicly exposed business failures and calamities (Gapper and Denton, 1996; Holton, 1998; Hussain, 2000; Kallenberg, 2007). The problematic consequences of asbestos litigation for power and electronic company Asea Brown Boveri (ABB) serves as an illustrative example. As a result of lack of control, poor ORM, and risk communication strategies, ABB was faced with a 90 percent downturn in share value between 2001 and 2002 and was virtually on the verge of bankruptcy (Kallenberg, 2007). Other illustrative examples where companies and their stakeholders have suffered from risk management shortcomings are the Brent Spar/Shell controversies in the 1990s, the energy company Enron's collapse in 2001, and to some extent, the financial crisis in 2008.

Thirdly, the importance of ORM is believed to have increased due to increased environmental concerns, as well as an increased focus on various corporate responsibilities. Environmental risk management and risk management related to various social and economic factors are increasingly seen as a corporate responsibility (Accorsi et al, 1999; Anderson, 1999, 2006; Ljungdahl, 2008; Sullivan and Sylvester, 2006; Öhrlings PricewaterhouseCoopers, 2008). As will be discussed further on, these three circumstances have motivated a broad set of stakeholders (notably regulators) to promote a greater awareness and control of companies' various operational risks.

Enterprise risk management

As a consequence of the many new risks that organizations are facing, the need for a wider approach to risk management has emerged. As the overall risk management has become more demanding and complex, the need for broader and more integrative risk management approaches has been suggested (Beaumont, 2007; Doherty, 2002; Smallman, 2000; EIU, 2007a,b; Ward, 2001). Generally, this approach is called *Enterprise Risk Management* (ERM), but is also sometimes referred to as enterprisewide risk management, integrated risk management, or firmwide risk management (Gates and Hexter, 2005; Jorion, 2006). The concept has mainly been developed in the US, and notably with an insurance or accounting perspective. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides a definition of ERM that has gained considerable acceptance:

> A process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (COSO, 2004, p 2).

In comparison to previous risk management approaches, ERM is more holistic and stresses all the risks that an organization may be facing. It promotes a 'portfolio approach' to risk management. It provides a structure that links various risks together. It promotes risk management that does not merely focus on the sum of various risk elements. It should also consider risk interactions (Beaumont, 2007; CAS, 2003; COSO, 2004; Holton, 1998; Jorion, 2006). A successful ERM function should incorporate financial, reputational, business, political, strategic, and other risks (Beaumont, 2007; CAS, 2003; COSO, 2004; Holton, 1998; Jorion, 2006).

Contextual and stakeholder effects on risk management

To understand how companies manage operational risks and how a proper and successful risk management should be organized, a number of factors have to be considered. Firstly, there is a need to understand the business context and the environment of the organization. Various political, regulatory, cultural, economic, and competitiveness factors must be considered. Moreover, various key drivers and trends in the surrounding society have to be taken into account (ISO, 2007). Secondly,

various internal and external stakeholders have to be identified and analyzed. It has been argued that an adequate understanding and consideration of contextual factors and stakeholders contributes greatly to the success of the risk management design (Accorsi et al, 1999; Elliott et al, 2000; Hodges, 2000; ISO, 2007; Ward, 2001).

As regards the development of ORM and ERM, many stakeholders have promoted increased awareness and better structured, more formal approaches to manage risks. For the financial industry, risk management frameworks such as the COSO in the US (COSO, 1992) and the Bank for International Settlement regulatory documents regarding operational risk management (BIS, 1998, 1999) have been implemented widely. In line with the norms outlined by BIS, the EU has adopted the EU Capital Requirements Directive that applies to all financial actors in the EU. In a broader sense (relating to all public companies), the UK Combined Code (Turnbull Report, 1999), the COSO II on enterprise risk management (COSO, 2004), and the German KonTraG (1998) are examples of guidelines/regulative documents that promote a greater control of all risks that a company is facing. In Sweden, the government has presented the Swedish Code of Corporate Governance, which encourages transparency and risk control (SOU 2004:130). Non-financial risk exposure (relating to, for instance, environmental and occupational risk exposure) is directed in the Annual Accounts Act (1995:1554:6). Apart from regulators, various business/standardization organizations, the UN, and academia have provided voluntary guidelines with implications for ORM and ERM. For example, the International Standardization Organization (ISO) is due to issue a risk management framework/guideline in mid-2009 (ISO, 2007). The UN launched the Global Compact (GC) and Global Reporting Initiative (GRI) in 2000 (UN, 2008).[3]

The stakeholders above have promoted the development of ORM and ERM. The formal regulations on ORM and ERM have been mostly applied in the US, but also in some European countries (Germany, UK), in Canada and elsewhere (EIU, 2007; King, 2001). This has stimulated academic research on ORM and ERM, but to a greater extent, a vast practitioner interest (e.g. EIU, 2007a; Gates and Hexter, 2005; PwC, 2004, Ward, 2001).

Surveys of risk managers' views on ORM and ERM activities is partially motivated by the recent changes to rules and regulations in many countries (Gates and Hexter, 2005). As a possible consequence,

[3] Guideline to measure and report economic, environmental, and social performance on issues like employee incidents, employee security and crime, industrial incidents.

regulators and corporate governance requirements are commonly rated as among the most important incentives for implementation of various ORM and ERM frameworks. Auditors' and insurance companies' demands as well as an urge to avoid reputational risk are also highly rated (e.g. EIU, 2007a; Gates and Hexter, 2005; PwC, 2004).

Research questions

The aim of this study is to investigate and analyze current opinions on operational risk management (ORM) among chief risk officers in Swedish industry. Motivated by a lack of previous academic research on how ORM as a more formalized activity is implemented in practice by the Swedish industry, the study addresses the following research questions:

- How is ORM organized in Swedish industry?
- To what extent is ORM implemented in Swedish industry?
- What stakeholders and contextual factors have directed the development of ORM?
- What are the perceived challenges with ORM?
- How do Swedish risk managers perceive enterprise risk management (ERM)?

METHOD

The study is based on in-depth interviews with 20 experienced chief risk officers (hereafter denoted respondents). Although the respondents' titles differed slightly they were all in charge of their companies' ORM (e.g. Chief Risk Officer, Group Risk Manager, Security and Risk Manager, Chief Operational Risk Officer). The mean respondent was in the age range of 50-60 and had about 10-20 years of experience working with risk management. All respondents were men.

Respondents came from 20 industrial companies in Sweden (henceforth referred to as firms): ABB, Alfa Laval, Assa Abloy, Atlas Copco, Autoliv, Electrolux, E.ON, Ericsson, Getinge, Holmen, Sandvik, SCA, Scania, Seco Tools, Skanska, SKF, SSAB, Stora Enso, Swedish Match, and Vattenfall. The firms were selected on two criteria. Firstly, they were identified as being exposed to a set of operational risks (e.g. significant environmental, occupational, technical, and process risks). Secondly, they were identified as being committed to work with sustainable development

and/or issues relating to corporate responsibility. These were established in a somewhat simplistic way by screening annual reports and web pages. Due to the business-sensitive character of the study, specific company opinions, as expressed by the respondents, will not be revealed. Quotes from the interviews will be anonymous.

The respondents were interviewed with regard to the following research questions:

- How does your company define operational risk? What are the most crucial operational risks for the company?
- Is ORM important for your company? Is it a prioritized issue for top management and board? Increasingly so?
- How are activities relating to ORM organized within the company?
- What are the most important stakeholders and factors for promoting awareness and management of operational risk?
- What are the greatest challenges with ORM?
- Has your company implemented ERM?

The interviews were conducted using a semi-structured method. All interviews but one were made in Swedish, and were recorded. The recordings were transcribed immediately after the interviews. The transcribed interviews were structured following the initial question formulary. Due to long travel distances, seven of the interviews were conducted over the telephone. Those remaining were carried out at respondents' offices.

RESULTS

The central risk management function

The interviews showed that the firms had no single coherent or formal definition of what operational risk is. Overall, however, the respondents stressed that their ORM concerned losses and business interruptions relating to production and to facilities, and were related to environmental risks and occupational health and safety issues, as well as to more hard-to-foresee external events. Two of the respondents stressed their view on operational risk as:

> Operational risks are everything that hinders the normal pace of activities.

> Broadly, it is about loss analysis and business interruption.

Specific industry characteristics have been argued to influence what operational risks an organization is exposed to, and consequently tends to focus on (ISO, 2007; McCrae and Balthazar, 2000; Ward, 2001). This was true for the sampled companies. As shown in Table 1, if companies were grouped on the basis of *type of industry*, such as engineering, project, or processing industry, the interviews indicated that the most important operational risks, and consequently the *risk maps* were rather similar.

Table 1. Most important operational risks to manage based on industry characteristics.

Type of industry	Characteristics	Most important risks
Engineering industry	Assembly factories. Several production units. Numerous suppliers.	• Business interruption due to machine breakdowns/ technical risks, and fire. • Environmental risks • Occupational risks • Sub-contractors and subsidiaries' failures to deliver supplies.
Project industry E.g. construction and building companies.	Many ongoing projects. Few or no production facilities/factories.	• Business interruption due to technical problems. • Occupational risks. • Legal/contractual risk. • Political risk.
Processing industry E.g. paper and pulp industry.	Few production facilities/factories of key importance. Large storage capacities.	• Business interruption due to machine breakdowns/ technical risks, and fire. • Environmental risks (leakages, emissions, hazardous chemicals) • Transportation failures. • Occupational risks.

With regard to the identification of risk it is essential to mention that mismanagement of first-hand risks (as above) is likely to spur the occurrence of second-hand risks (new risks emerging as a consequence of first-hand risks). The challenges with second-hand risks and notably reputational risk were informally stressed by *all* of the respondents. Reputational risk was perceived as likely to affect factors such as brand value, consumer/investor trust, and consequently profits.

There were significant organizational differences regarding the central function dealing with operational risks. As displayed in Table 2, these functions were affiliated/subordinated/reported to different corporate functions within the firms.

Table 2. Affiliation of the ORM function by industry characteristics.

Organizational affiliation of the ORM function	Engineering industry	Project industry	Processing industry
Internal audit	1		1
Legal department	2		1
Financial department /Treasury	1		2
Environmental/ Sustainability department	2		
Insurance department		1	
Independent department *Reporting directly to top management*	2	1	
No formal department *ORM: Pure line management responsibility*	4	1	1

Fourteen firms had formal functions for the management of their operational risks. However, as shown in Table 2, the firms differed in the ways their ORM was organized. The diversity in organizational affiliation of the ORM function was partially stressed as a challenge for finding coherent ways of working with ORM. One of the respondents stressed this in the following terms:

> The operational risk management function…no matter how it works…has no natural home…either in the financial or in the legal department… and definitely not in accounting…but, where it is hosted…is more a matter of history and tradition…and it differs from one company to another.

The organization of ORM activities has been found to be a reason for focus and resource allocation to risk management activities (e.g. Ward, 2001). However, as the ORM functions' organizational affiliations did not show any distinct pattern, and as this study focuses on the broad, common features, stakeholder pressures and challenges of ORM, this will not be considered a factor in the following.

There was a broad consensus among the respondents that ORM should primarily be a *line management* responsibility, rather than a central risk function responsibility. Regarding the 'central' risk function (regardless of the affiliation), the respondents stressed that the scope and focus of their responsibilities concerned overall risk identification, coordination of risk management activities, provision of advice and education of risk managers and employees, and analysis of reasons for business interruption. Together with insurers, their responsibilities also included identification of various needs for insurance. The division of risk management responsibilities between the central ORM function and *line management* were underscored by two of the respondents in the following terms:

> Our responsibility is to be moderators…to be the devil's advocates. We make recommendations…we provide tools and training…we are on standby…but line management makes all the decisions.

In the assessment and analysis of operational risk the firms applied rather similar tools. The respondents stressed that their firms applied informal and formal methods to assess their risks. One respondent stressed the informal approach to ORM as follows:

> It's a muddling-through process…you have to use your toolbox…be very creative. There is actually just one answer…you have to visit the plants…go there, watch and survey...it's often very hands-on.

More formally, the sampled companies applied qualitative (such as self-assessment scales of perceived risks among employees or risk workshops), semi-quantitative (such as key risk indicators) and quantitative (for instance, regarding business interruptions or fatalities) risk assessment tools and analysis. In order to establish a risk profile, a *risk map*, of the firm, eight of the companies used what was frequently referred to as the *blue model*. This model was originally developed for the paper industry, but has been adopted and adjusted to fit also other industries and their various needs. It visualizes the prevalence of various risks by using a colour code, where blue is excellent, and red is alert. The companies used the blue model as a benchmark and visualization for improvement of the risk management activities.

As regards the opinions of and firms' implementation of enterprise risk management (ERM), the respondents showed a moderate interest in this approach, but few of the investigated firms had adopted it. Fifteen respondents stated that, at this point, they were not striving for an ERM

approach to risk management. Four of the respondents reported that their companies applied an ERM approach, while one respondent said that ERM was under investigation. With regard to the four firms that applied an ERM approach it is essential to mention that two firms had been guided by German legislation (KonTraG), and the other two had been directed by American stock exchange rules as stated by the U.S. Securities and Exchange Commission (SEC) and the Sarbanes-Oxley Act (SOX, 2002, COSO, 2004).

The internal stakeholders – top management and the employees

Concerning the mandate and commitment for ORM activities, sixteen respondents stressed that ORM was of great and increasing concern for their firms, and was also supported by top management and the board as shown by the following quotes:

> Yes, there is clearly an increased acceptance of these issues...no one still questions that we need to do this... but it also depends on that the management and board have started to take this seriously... they really read our reports.
>
> The management entirely accepts this new risk approach.
>
> The issue of operational risk management is now more prioritized by management...there are a number of early adopters.

There was consensus among the respondents regarding the importance of the employees for the success and implementation of ORM. *All* of the respondents stressed that the employees were crucial stakeholders for the success of ORM activities. This opinion can be exemplified by the following quotes:

> In our company, every employee is a risk manager for his or her specific task area...everyone manages risk in one-way or another.
>
> The employees own the issue...they have been educated on what to focus on...they know that it is their responsibility that things work.
>
> Previously, line management working in the factories thought this to be damned uncomfortable... But now, they have realized that it is an advantage... they prioritize what risks to focus on... and look at what to act on.

Even though the firms belong to different type of industries, the interviews indicated that there was agreement among the respondents regarding important external stakeholders and contextual factors. Four were particularly emphasized: regulators, sustainability and corporate responsibility factors, the insurance industry, and the financial markets.

Firstly, the interviews indicated that the investigated firms were very concerned about regulators, notably the Swedish government and the EU. According to the respondents, regulators were perceived to have affected the risk management strategies extensively. Fifteen respondents stressed that their firms had historically over-complied with regulation concerning occupational and environmental health and safety issues. Sixteen respondents believed that their firms' risk considerations had been affected by the *Swedish approach* to environmental protection, risk management and regulation. Seventeen respondents emphasized the Swedish Code of Corporate Governance (SOU 2004:130) as directing the outline of their risk management strategies.

Apart from being regulated or guided by Swedish legislation and EU directives, it has already been mentioned with regard to ERM that other national regulations and rules had been guides for four of the investigated firms.

Secondly, sustainable development as well as principles on corporate responsibility was believed to be important. Seventeen respondents emphasized that they were key drivers for their work with operational risk management. Moreover, various *international management standards* such as ISO 14001 (environmental management), OHSAS 18000 (occupational health and safety standards), or the Global Reporting Initiative (GRI)[4] were stressed by *all* of the companies. As illustrated by a quote from one respondent:

> Nowadays it is more of a balance…it goes both ways…and I believe that is good…there is a push for cooperation between the companies, the municipalities and the surrounding society… people around us…organizations such as the trade unions are important…there is a fruitful dialog…on the moral aspects of our responsibilities…I believe that is good.

[4] On employee incidents, employee security and crime, industrial incidents etc.

Thirdly, *Insurance Companies* were perceived as important. Seventeen respondents stressed that the insurance industry put formal demands on how their firms managed their operational risks. This was the case notably with respect to physical risks (e.g. risk of fire), but also regarding process risks, technical risks, transportation, and employee safety. The respondents pinpointed two major reasons for this development: (1) In order to get your facilities insured, there is a need to provide relevant data on risks. (2) Insurance premiums related to operational risks have increased substantially over the last decades. One respondent summarized this development as follows:

> If you go back to the early 1990s, no one asked specifically for details… today they scrutinize all our risk reports...they issue recommendations which they follow up closely… it's a mutual interest…if we are good at risk protection we'll get low premiums…you get what you deserve.

Fourteen of the investigated firms used captives (an internal insurance function owned by the company) as a management control measure to improve risk management. By using captives, premiums were used as a managerial tool to reduce levels of risk, and to establish a better control of a subsidiary or a specific plant. One respondent commented:

> We have a central responsibility for the insurance issues…we can decide the premiums…and we have chosen high premiums on the local plants…the reason for this is that it's a strong incentive…if you have a lot of damages, a lot of interruption in the production…it must affect your result…and in return… this works as an impetus for action.

Fourthly, the *financial markets* were perceived an important stakeholder. Fifteen respondents stressed the increased interest and demand for ethical, environmentally sustainable, and/or socially responsible investments (SRI) as factors believed to have spurred the increased focus on various operational risks. Thirteen respondents underscored the importance of *rating agencies* such as Moody's and Standard and Poor's. One respondent highlighted the increased pressure from and importance of financial actors in the following terms:

> It started with the environmental issues…investors became more prone to ask questions…they wanted to know how we managed risk… but now, this has broadened...there are funds that specialize in 'well-managed' companies who handle their risks well, and this has increased with CSR and various stock market indexes. We receive more and more questions from the investors regarding these issues, and we believe that it is important to answer their questions.

Challenges and perceived problems

The interviews showed that there are a number of challenges that might have complicated the process of achieving a successful ORM. Overall, the respondents stressed four major challenges: risk perceptions, cultural obstacles, risk communication, and measurement of risk.

Firstly, the respondents stressed concerns with subjectivity in employees' risk perceptions. The employees' varying perceptions of risk were stressed to complicate the process of identification, analysis and evaluation of risk. Consequently, the differences in employee risk perceptions were presumed to influence risk treatment. Fourteen respondents stressed the importance to understand and pay attention to differences in employee risk perceptions. The following two quotes illuminate this problem:

> The concept of risk is incredibly subjective…it varies from one person to another…one employee might think something is a risk while another doesn't…so, for an organization it is important that the people working with these issues get a coherent view of what constitutes a risk...things that relate to risk perceptions…it's important to get a collective standpoint… you have to understand and prevent subjectivity.

> A lot of the activities with risk prevention is pure behavioral science…to make people aware of the risks…and then to make them change attitudes…and actions.

Secondly, and in line with the discussion on risk perceptions above, the respondents stressed various cultural obstacles as hurdles and challenges for implementing a successful ORM. Cultural differences in employees' risk perceptions, but also cultural issues regarding employees' job satisfaction, trust of management, and loyalty to the firm, were believed to complicate risk management activities. The respondents pointed out that, given the multinational character of their companies, it was important to understand how cultural differences in risk perception affected the overall risk profile of the company. Two respondents described this cultural challenge in the following terms:

> There are also cultural differences in the perception of how the employees perceive their jobs…if you look at a truck driver…there is a vast difference in how you value your job…If you compare Sweden and UK…It is of course a matter of education…in the UK, where the truck driver has less education…it's tougher to communicate…and they don't share the same feelings for the company…the same values.

> Job satisfaction is an important issue…if an employee is dissatisfied, he or she won't take the same responsibility…as an example… dropping cigarette butts…a dissatisfied person is a greater risk than a satisfied one…it's an important part of the risk- prevention work…to increase job satisfaction…the very sense of your job… this is especially a challenge in our plants abroad.

Thirdly, the respondents argued that the aforementioned hurdles to effective and successful ORM could be solved partly by improving risk communication and dialogue with employees. However, in addition to being a solution to the above hurdles, the respondents stressed risk communication to be a hurdle itself. As pointed out by one respondent:

> Risk communication is really important… but really difficult…it's hard to develop policies that are universal…intelligibility…that's the challenge...to talk about risk so that everyone understands.

Fourthly, the respondents also stressed various challenges related to measurement of risk. Overall, there was consensus among all the respondents in regard to the challenges of measuring risk, but the respondents displayed a somewhat divided opinion about the importance of quantification of *all* risks. Notably, respondents who reported to, or were affiliated, with the financial department/treasury as well as those companies who did not have a formal ORM function were more prone to stress the benefits of quantitative measurement and analysis. Four respondents commented on the challenge of measurement in the following terms:

> You'd be disappointed if you strived for total quantification regarding all risks…to put a number on all risks.

> We are not even looking for that great tool that fits everywhere… not looking for the exact measurement…we are trying to make a judgment…and it might be a bit subjective. We are critical of the approach that puts a value on every risk in order to put them in a formula.

> When you look at risks, you always have an ambition to measure them…some types of risks are easy to quantify… while others are harder to quantify… that is something that you have to accept… but you have to try to make an assessment of the total risk level.

> Although difficult, quantification of risk is desirable…to some extent, it is an issue of legitimization of the risk management function.

DISCUSSION AND CONCLUSIONS

In the title of this paper, I ask whether a new risk paradigm has emerged in Swedish industry. Without a doubt, this has been the case. Operational risk management (ORM) has gained increasing importance in recent years, and this was clearly endorsed by the respondents in the sampled companies. The results of the interviews suggest:

- ORM is crucial today for Swedish industry. It is supported by the top management and the board and also, increasingly, by employees.
- ORM is not a coherent activity with regard to industry types or between companies. Rather, the organizational affiliation and scope of ORM differ.
- The management of operational risk is a line management responsibility. The central ORM function is at best a small function to identify, control, advice, educate and to boost an increased awareness of various risks in the organization.
- The Swedish government's approach to various environmental risks, occupational risks, health and safety issues, and to corporate governance have stimulated an overall high awareness and increased implementation of ORM.
- The insurance industry, the financial markets, and voluntary compliance with sustainability and corporate responsibility principles have affected the internal motivation and activities with ORM.
- Unlike many countries, Sweden has few forceful regulations on formal approaches to ORM. More indirect circumstances and related regulation have promoted ORM in Sweden.
- Enterprise risk management (ERM) is not widely implemented by the industry.
- Diversity in risk perceptions, cultural differences, issues on risk communication, as well as measurement of risk were perceived as challenges for the fulfillment of a successful ORM.

The results of this study indicate that the Swedish industry approach to ORM is today rarely a strictly formalized, straightforward activity in Swedish industry. Instead informal, decentralized, pragmatic, bottom-up approaches to ORM are preferred over an ERM approach to overall risk exposures. There is no uniform or prevailing model for how to organize the business function dealing with ORM.

A majority of the investigated companies had central functions for dealing with various operational risks, and the respondents agreed on the role of the central risk management function. The respondents stressed that ORM was first and foremost a line management responsibility. Risk management strategies and risk mitigation initiatives were believed to be best developed and managed where the risk exposure occurred. This division of risk management responsibilities has support in previous research. Ward (2001) argued that the task of the central risk management function is not to take responsibility for managing risks away from line management but to facilitate the development of risk management in the organization. As regards the organization of the ORM function, there were few common features between the investigated firms. In line with the opinions of the respondents in this study Ward (2001) stressed historical links (affiliations) to a specific department as guiding the organization and activities of the risk management function.

Stakeholders and the context have been stressed to affect ORM (Elliott et al., 2000; Hodges, 2000; Ward, 2001). Regarding the investigated firms, the respondents specifically stressed four stakeholders/contextual factors as guides for their ORM activities. These are attributable to economic incentives and will be discussed first, while the others are more concerned with the regulatory context.

The respondents stressed that various factors relating to the financial markets had motivated ORM. Investors were believed to increasingly take into account factors relating to ORM and ERM, and rating agencies (e.g. Moody's and Standard and Poor's) were also mentioned to spur the development. As several such firms have launched ERM ratings to better establish credit standings (e.g. Standard and Poor's launched an ERM rating in 2006), it is likely this will enhance in the future. Aside from this, the respondents stressed the need to work closely with insurers to reduce the level of risk, and thereby decrease their premium payments. Furthermore, second-hand risks such as reputational risk were considered important and relevant to factors such as brand value, consumer/investor trust, and consequently profits.

Secondly, the interviews indicated that the sampled companies were highly attentive to regulators' investigations, legislations, and directives on various risks. Regulators were perceived to have been primary guides for the ORM strategies. Arguably, regulators could be characterized as both contextual factors (the regulatory environment) and stakeholders. According to the respondents, the firms had historically over-complied with regulation (especially regarding occupational and environmental

health and safety issues) and had been strongly influenced by the Swedish approach to environmental risk management and regulation. In a contextual sense, the respondents underscored the role of the Swedish government's environmental approach, sustainability factors, and an increased pressure on the industry to take responsibility for risks. I will discuss below some possible reasons for these findings.

Sweden has since long been a proponent of strict regulation of environmental hazards. Sweden has been proactive and precautious regarding chemicals, consumer safety, and occupational hazards, both domestically and in the EU (Kallenberg, 2008a, 2008b; Karlsson, 2006; Kelman, 1981; Liefferinck and Andersen, 1998; Löfstedt, 2003a, 2003b).[5] It has been argued that the strict Swedish environmental approach has "spilled over" to affect industry opinions and industry application of precautionary measures (Kallenberg, 2009; Karlsson, 2006).) In line with this, Sweden has been highly proactive in a shift towards sustainable development and an ecologically sustainable society. (Karlsson, 2006; Löfstedt, 2004; Rämö, 2003). The Swedish Environmental Code (Swedish Government Bill 1997/98:45) is regimented by sustainable thinking and has been a guideline for the Swedish approach to environmental legislation, both in Sweden and in the EU (Karlsson, 2006). For industry, this development has been motivated by environmental, competitive, as well as socio-economic parameters. It has been argued that due to the strict environmental approach, Sweden have gained competitive advantages in the field of environmental technology and environmentally driven business development (Karlsson, 2006; Porter, 1998; Porter and van der Linde, 1995; Swedish Trade Council, 2003; Sölvell et al., 1991; Weale, 1992).

Besides the Swedish regulatory approach, a majority of the investigated firms stressed the Swedish Code of Corporate Governance (SOU 2004:130) as guiding the formulation of their risk management strategies. This finding has support in previous research, where it has been argued that formal demands and approaches to risk management have emerged

[5] In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are risks of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (UNCED, 1993).

as a result of guidelines for corporate governance (Elliott et al., 2000; Gates and Hexter, 2005; Sobel and Reding, 2004; Ward, 2001). [6]

In conclusion, Swedish industry approaches to ORM have previously been motivated by internal economic incentives, as well as an overall 'precautionary' Swedish approach (governmental as well as industrial) to various risks and regulation. However, in comparison to many other countries, there are of today fewer formalized rules and regulations relating to ORM and ERM activities and reporting. I believe this will change, and to some extent it already has. For example, in 2008 a revised Code for Corporate Governance was launched in Sweden. Besides the need for simplification and broadening of the previous Code, it was motivated by amendments in EU Directives relating to accounting rules (European Commission, 2006; The Swedish Corporate Governance Board, 2008). As regards the internationalization of best practices for reporting on risk, internal control, audits, and accounting rules, the US COSO I and II (1992; 2004) and the UK Combined Code (1999) have been highly guiding. Informally, it has also been guiding for companies in Sweden (FAR SRS and the Confederation of Swedish Enterprise, 2008).

As in all research, this study has its strengths and weaknesses. It could be argued that the scope of the study is too broad, and that it is based on a limited number of respondents. However, I believe that the study presents several interesting results as regards industry considerations on the organization of ORM and ERM, the role of the central ORM function, as well as regarding various important stakeholders, and perceived challenges. In the light of new regulations, and as a consequence of increased stakeholder pressures, corporate incentives for ORM and ERM activities are likely to increase in the future. Best practices, and normative guidelines are likely to be developed further and converge. As a consequence, Swedish industry may have to adopt more formal and integrated approaches to manage and report their risk exposures, despite predilections for the informal, decentralized, and bottom-up approaches used in the past.

[6] E.g. the Cadbury Code (ICAEW, 1994) and the Turnbull Report (ICAEW, 1999) in the UK.

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Corporate risk management of chemicals: a stakeholder approach to the brominated flame retardants

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The prerequisites for chemicals risk management within the corporate sphere have changed over the last decade. This change has been driven by a number of factors such as an increased use of the precautionary principle, the reversed burden of proof and an increased focus on environmental and sustainable development initiatives, in the EU, EU Member States and elsewhere. In Sweden, this development has been highly pronounced. The objectives of the present study are to (1) explore the opinions within Swedish industry concerning items related to chemicals risk assessment and regulation and (2) to identify and rank various stakeholders and factors perceived to have affected the companies' risk management strategies of the brominated flame retardants (BFRs). The results were somewhat contradictory and indicated that the sampled companies favored precautionary measures, while they at the same time favored scientific EU risk assessments over national regulation. Furthermore, contrary to industry opinions elsewhere, they were favorably inclined to the increased burden of proof, to the novel REACH Directive, and to the Swedish government's objective of a non-toxic environment. Regarding the BFRs, the companies' risk management strategies were believed to have been mostly influenced by (1) internal policies and guidelines regarding sustainable development and corporate social responsibilities, (2) the application of the precautionary principle, (3) EU directives/risk assessments, (4) the Swedish Chemicals Agency and Swedish research, and (5) PR/marketing considerations. Overall, the study indicated that the sampled companies displayed some inconsistencies regarding preferred approaches to regulating and managing risk. In a somewhat tentative manner, the paper ends with a discussion of possible explanations for these inconsistencies.

Keywords: chemicals risk management; environmental risk management; brominated flame retardants; precautionary principle

Introduction

Ever since the 1980s, and more extensively so during the 1990s, regulations, risk assessments and the management of chemicals have been in focus for the EU, EU Member States, industry, environmental groups, NGOs (Non-Governmental Organizations) and academia. It is an area attracting growing interest, partly due to the previously rather non-regulatory approach from most national governments and the EU, as well as the high stakes both in monetary terms and regarding public/consumer health and safety, and the environment. For the industry in Europe, the context of and the prerequisites for chemicals management have changed due to a number of factors such as an increased regulatory burden (partly due to the REACH Directive),[1] the emergence of various sustainable development efforts in the EU and elsewhere, a shift in

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public perceptions of environmental risks, a tougher NGO screening of the industry, pronounced consumer demands for safer products, increased media coverage, financial, accounting and insurance companies' increased interest in operational risks, as well as voluntary industry programs[2] (Accorsi, Apostolakis, and Zio 1999; Anderson 1999, 2006; European Commission 2001b; ISO 2007; Kallenberg 2007; Karlsson 2006; Löfstedt 2003b, 2007; Sullivan and Sylvester 2006).

The issue of potentially hazardous chemicals in products has lately been publicly highlighted by a number of cases, such as phthalates in plastics (Renn and Schweizer 2008; Wiener and Rogers 2002), nano-particles in cosmetics and other products (e.g. Ennart 2007; Hertel and Zimmer 2008), dioxin in animal feed and benzene in Perrier (Wiener 2006), hazardous levels of lead in plastic toys from China (Smitt 2007) and brominated flame retardants (BFRs) in, for example, electronics and textiles (Kallenberg 2008). These examples, among others, have attracted much interest from the EU, EU Member States and the public, have been exposed frequently in the media, and have been debated in a wide variety of forums (Wiener and Rogers 2002; Wiener 2006; Löfstedt 2007). In Sweden, the issue of potentially hazardous chemicals in consumer products (notably so the BFRs) has received much interest from the Swedish government, the Swedish Chemicals Agency and various 'green' lobby groups.

For the industry, this development has clearly induced an increased focus on and work with chemicals risk management, consumer safety and environmental health. Mismanagement of chemical risks is likely to decrease consumer confidence, and in the long run lead to increased chemicals regulation, an increased burden of proof for the industry, as well as decreased industry returns and shareholder values (Kallenberg 2007).

Going beyond merely chemicals risk management, it is essential to stress that there is an increased interest in how corporations handle their risks, and notably their operational risks. Operational risk management is related to the way a company operates its business rather than the way it finances its business and focuses on the adverse deviation of a firm's performance due to how the firm is operated (King 2001). This development has been driven by factors such as numerous publicly highlighted business calamities (e.g. Brent Spar/Shell, Exxon Valdez, Love Canal, Barings Bank, Enron, Parmalat and ABB), increased environmental concerns, increased dependence on IT, accelerating pace of business, globalization, terrorism, deregulation as well as regulation of industries, increased public exposure in media, and attention from various NGOs (Anderson 1999, 2006; CAS 2003; Holton 1998; Hussain 2000; Jüttner 2005; Kallenberg 2007; Ward 2001).

The objectives of the present study are to explore industry opinions on the application of the precautionary principle and scientific risk analysis, the reversed burden of proof, the REACH Directive and various responsibility issues regarding chemical (environmental) risks. Furthermore, an objective of the study is to identify and rank various stakeholders and factors perceived by the respondents to have affected the companies' risk management strategies of the BFRs.

Background and hypotheses

History of Swedish chemicals regulation

The Swedish approach to political decision-making and regulations has historically been characterized by a centralized but inclusive approach, involving government,

trade unions (notably so LO and TCO), the employers' federation (Svenskt Näringsliv, previously SAF) and other interest groups. As a consequence, regulations are normally adopted by industry without public disputes (Löfstedt 2004). Kelman (1981) argued that the early regulation of chemicals came as a result of negotiations between the above parties, and that these agreements generally involved business moving toward government's views more than the reverse.

Since the 1960s, Sweden has worked to limit and abolish the use of hazardous substances and chemicals that have adverse effects on the environment and people's health (Löfstedt 2003b). Lately, this ambition has increased with the adoption of the environmental objective of 'a non-toxic environment', and the phasing-out of the most toxic chemicals by 2020. This objective is part of the Swedish Environmental Code approved by the Swedish Parliament in April 1999 (Swedish Government Bill 1997/98: 45), and has had a strong impact on the current chemicals policy and chemicals control in Sweden, but also on the Swedish approach to chemicals control and regulation in the EU (Löfstedt 2003b). According to many scholars, Sweden is widely regarded as the pioneer of present day chemical regulation in the EU as noted by the Swedish formulations utilized in the EU Chemical White Paper launched in 2001 (European Commission 2001a; Karlsson 2006; Liefferinck and Andersen 1998; Löfstedt 2003b). Since then, there has been an intense debate involving many stakeholders regarding the subsequent REACH Directive, and to put it mildly, it has not been easy to arrive at a consensus (Karlsson 2006; Löfstedt 2007; Renn and Schweitzer 2008).

The precautionary principle

In parallel to the heated debate regarding the REACH Directive and other environmental regulatory initiatives, there has been an ongoing discussion about the interpretation and broader application of the precautionary principle (Löfstedt 2003a, 2007; Wiener and Rogers 2002; Karlsson 2006). Sweden has been one of the principle's most active proponents, and to a great extent, this has been reflected in the Swedish approach to national as well as EU environmental policy and chemicals regulation (Karlsson 2006; Löfstedt 2003b; OECD 2004; Sandin 2002). Informally, many would say that the principle means that on some occasions, measures against a possible hazard should be taken even if the available evidence does not suffice to treat the existence of that hazard as a scientific fact (Marchant and Mossman 2004; Sandin et al. 2002). Formally, probably the most influential statement of the precautionary principle is the 1992 Rio Declaration, principle 15 (EEA 2001; European Commission 2000; Marchant and Mossman 2004; Sandin 2004).

> In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. (UNCED 1993)

The first legal use of the precautionary principle was the 1969 Swedish Environmental Protection Act that introduced the 'reversed burden of proof', requiring the industry to demonstrate the safety of their products to regulators (Sand 2000; Swedish Government 1969; Westerlund 1975, 1981). During the 1990s, the Swedish faiblesse for the precautionary principle increased as a result of

increased environmental ambitions, and the defense of certain negotiated exemptions provisioned by the EU when Sweden joined the EU in 1995 (Karlsson 2006). At an EU level, following the adoption of the Maastricht Treaty and the Amsterdam Treaty, the precautionary principle was increasingly used as a philosophy for regulation of hormones in beef (Forrester and Hanekamp 2006; van Asselt and Vos 2006; Vogel 2002, 2003), genetically modified organisms (Löfstedt 2004; Lynch and Vogel 2000; Marchant 2001; Tait 2001), regulation of toxic substances (e.g. phthalates and BFRs) (Kallenberg 2008), climate change and guns (Wiener and Rogers 2002), and electromagnetic fields (Balzano and Sheppard 2002; Kheifets, Hester, and Banerjee 2001; Wiedemann et al. 2006). This development is not solely a Swedish or European phenomenon, and lately many scholars have stressed that there is weak support for the common view that the EU is more precautionary than the US (Hammitt et al. 2005; Wiener 2006). Even though the precautionary principle is not a systematic part of US law, many aspects of US law and policy do promote precautionary approaches by companies (Elliott and Elliott 2008).

Despite its seemingly widespread political support, few policies for risk management have created as much controversy as the precautionary principle, and it has emerged as a fundamental challenge to conventional policy analysis regarding hazards characterized by great uncertainty (Löfstedt, Fischhoff, and Fischhoff 2002; Marchant 2001; Marchant and Mossman 2004; Sunstein 2002, 2005). There has been a rather widespread opinion among critics of the principle that increased use of it might be endangering policy analysis and regulation, based on the following arguments (Marchant and Mossman 2004; Sandin et al. 2002):

- The Principle is ill-defined, ambiguous and arbitrary.
- The Principle is absolutist.
- The Principle will lead to increased risk-taking.
- The Principle is based on value judgments or 'ideology'.
- The Principle is unscientific or marginalizes the role of science.

With regard to the scope and objectives of the present study, it is essential to stress that the use of the precautionary principle as a philosophy for chemicals regulation has been criticized by the industry, as well as by industry interest organizations. The criticisms have been based on the arbitrary and political use of the principle, a fear of increased costs for the industry due to the increased burden of proof, a lack of a cost-benefit approach to regulation and concerns of a non-scientific approach leading to capricious and irrational regulation (Cefic 2002; Graham and Wiener 1995; Löfstedt 2004, 2007; Sunstein 2002, 2005; Wiener and Rogers 2002).

In Sweden, the principle has been broadly accepted. However, there have been criticisms of the strict interpretation and too frequently political application of the principle, as regards, for example, the regulation of the BFRs (Kallenberg 2008; Lundblad 2005; Sanchez 2004). In 2006, a group of industry representatives stressed that the Swedish environmental policy is far from always based on fact and science, and in line with the above criticisms of the precautionary principle they argued:

> Every serious actor ought to agree upon a couple of fundamental principles for an effective environmental and chemicals policy. Decisions must be based on sound and scientific grounds. The actions that are taken must be proportionate to the expected

> benefits...We are seriously concerned about the government's lack of a long-term strategy regarding this matter. (Fredholm, Björling-Hambraeus, and Narvinger 2006)

Brominated flame retardants

Over the past 50 years, the polymer industry has grown dramatically, and large numbers of products have been introduced to the market. The polymers have different properties and uses and most of them are petroleum-based and hence flammable (BSEF 2000; Viberg 2004). Examples of products where flame retardants have been used are elevators, cars, textiles in public areas, airplanes, protective clothing and electronic equipment such as computers, TV-sets, and mobile phones (BSEF 2000, 2005; KemI 2006; Thuresson 2004; WHO 1994). There are five BFRs that are most used and about which there is considerable knowledge (BSEF 2000, 2005; KemI 2003). These BFRs are all on the EU existing substances list[3] and most of them have been risk-assessed and analyzed by the EU, but also by EU Member States, by industry and by industry interest organizations. These are:

- DecaBDE (Decabromodiphenyl ether) – (Risk assessed/prolonged risk assessment in the EU)
- TBBPA: (Tetrabromobisphenol A) – (Risk assessed by UK/EU)
- HBCDD: (Hexabromocyclododecane) – (Risk assessed by Sweden/EU)
- OctaBDE (Octabromodiphenyl ether) – (Phased out in EU)
- PentaBDE (Pentabromodiphenyl ether) – (Phased out in EU).

BFRs have been found in the environment throughout the world, both in sediment and in a wide variety of biota. Exposure to the BFRs may occur in several stages of the substance's life cycle, during production, transportation, use of BFR-containing products, and recycling (e.g. KemI 1994, 2003, 2006). In brief, the concerns about the risks of the BFRs are based on the fact that they are persistent in nature, bioaccumulative and toxic (PBTs). There have also been claims that the geographical distribution is similar to that of PCBs and the DDTs, substances that have been proven to be highly hazardous, and that have been banned in Sweden (1972) and in the EU (1985) (Nylund et al. 1992; Thuresson 2004; Viberg 2004).

The Swedish approach to regulation of the BFRs

The issue of regulation and risk mitigation of the BFRs has been an important goal for the Swedish government, NGOs and various research institutes in Sweden. Sweden has been a strong proponent for regulations of the BFRs in Sweden and in the EU, especially concerning, Penta-, Octa- and DecaBDE. Strongly guided by precautionary measures, in January 2007, Sweden adopted a national ban on DecaBDE. The ban was questioned by several stakeholders, and was later faced with a legal challenge from the EU authorities. Following the inconsistencies between the EU risk assessments and the national restrictions, Sweden lifted the ban in May 2008. Despite this retreat, Sweden has elucidated that it will continue to work for a total ban of DecaBDE, but it seems that the efforts ahead will be directed more towards EU risk assessments rather than towards national regulations.[4] Overall, the Swedish approach to regulation of the BFRs has been directed by a set of stakeholders/factors, where the predilection for precautionary measures, rather than a more scientific approach to assess risk, has been the most important. This

approach has been criticized by a number of actors, including trade unions, academics, industry representatives, but also by officials at the Chemicals Agency (Forsberg and Löfstedt 2007; Fredholm, Björling-Hambraeus, and Narvinger 2006; Ingdahl 2006; Jacobson 2006; KemI 2004; Kallenberg 2008; Lindström 2006; Lundblad 2005). In a study by Kallenberg (2008),[5] applying a stakeholder approach to the Swedish government's regulation of the BFRs, data indicated that the desire and work for regulation of the BFRs had been directed by the following four stakeholders/factors.

- *The Swedish predilection for the precautionary principle.* In line with the statements of the Environmental Code and the objective of a non-toxic environment, Sweden has applied precautionary measures that have clearly affected the regulation of the BFRs in Sweden and the Swedish approach to BFRs' regulation in the EU.
- *The Social Democratic Minority Government, strongly dependent on negotiations with the Swedish Green Party.* The work to achieve a total ban of all BFRs (as well as the highly controversial 2006 national ban of DecaBDE)[6] came partly as a result of bargaining between the Social Democrats and the Green Party (e.g. Hennel and Olsson 2002; Lindström 2006; Wetterstrand and Eriksson 2002).
- *Environmental lobby groups* such as the Swedish Society for Nature Conservation, Greenpeace and WWF influenced the political focus (Johansson 2002, 2004; Lindström 2005a,b). For example, in 2005, the then Minister for the Environment, Lena Sommestad, made a strong public statement, together with Greenpeace, stressing the need for a total ban of all the BFRs (Lindström 2005a,b).
- *Swedish research initiatives* influenced the political opinion and the approach to the BFRs. For example, in 1990, the Stockholm University initiated a multidisciplinary environmental research center with a strong focus on environmental chemistry. The center has been highly involved in research on the BFRs, and the Swedish government, the Green Party, as well as various environmental groups such as Greenpeace and the Swedish Society for Nature Conservation have frequently referred to the results from the center (TT 1990, 1998, 2003).

Hypotheses of the study

In line with objective (1) of the present paper, six hypotheses were developed. The sample companies were assumed to:

H1: Display a negative opinion of the Swedish government's application and promotion of the precautionary principle.
H2: Display a positive opinion of the objective of a non-toxic environment.
H3: Display a negative opinion towards the reversed burden of proof, with a shift in responsibility, from regulators to industry.
H4: Display a negative opinion of the REACH Directive.
H5: Stress that environmental/chemical risk assessments and regulations should be handled and regulated within the EU, rather than nationally.
H6: Stress that risk mitigating initiatives and regulations should be based on scientific risk assessments and risk analysis.

Method

The present study is based on data collected by questionnaires in 2007. The questionnaire comprised 44 items, which were rated on a five-point scale. As regards the hypotheses developed to meet the first objective (1) of the study (Table 1) items were rated from 1 to 5, where 1 indicated a negative opinion/absolutely not, and 5 denoted a favorable opinion/to a great extent. The items relating to the second objective (2) (Tables 2 and 3) were rated from 1 to 5, 1 indicating that the stakeholder/factor had influenced the risk management strategies 'absolutely not', and 5 to a great extent. In addition to the fixed scales, the companies had the possibility of adding comments if they wished to specify or clarify their answers.

The sample consisted of eight Swedish industrial companies identified as potential users of BFRs in their production and/or products. The questionnaires revealed that seven out of the eight companies used BFRs in their production/products, and that one company had recently abolished the use of the BFRs. The companies in the sample were: ABB, Alfa Laval, Atlas Copco, Autoliv, Electrolux, Ericsson, Scania, and Volvo. At each company, a group of employees (two–five people) highly involved in the work with chemicals (BFRs) risk management responded to one questionnaire. Despite possible negative outcomes due to group dynamics or group think bias, this method was assumed to best reveal the 'company opinion' as opposed to aggregates of individuals' opinions. Further, since several of the items were of a business-sensitive character, data are presented as aggregates of all the companies.

Results

Industry opinions with regard to the Swedish approach to environmental (chemicals) regulation

As put forth in objective (1), the present study was designated to explore industry opinions regarding chemicals (environmental) risk assessment and regulation. Notably, the study aimed to investigate the sample companies' opinion to the application of precautionary measures versus a more scientific approach to risk assessment and regulation. As displayed in Table 1, the companies were highly in favor of scientific risk assessments conducted by the EU (rather than in a national setting), but were at the same time highly positive to national precautionary measures. Moreover, they were moderately positive to REACH and to the reversed burden of proof, but less so to the objective for a non-toxic environment.

Table 1. Industry opinions on elements of the Swedish regulatory approach.

Industry opinions	Mean	S.D.	*n*
Opinion regarding the precautionary principle	4.4	0.53	8
Opinion regarding the objective of a non-toxic environment	3.3	0.76	8
Opinion regarding REACH	4.0	0.69	8
Opinion regarding the reversed burden of proof	3.9	0.38	8
Preference for EU risk assessments (over national risk assessments)	4.7	0.48	8
Preference for sound scientific risk assessments	4.8	0.40	8

Note: Mean indicates the average rating of the sampled companies. 1 equals a negative opinion/absolutely not, and 5 denotes a favorable opinion/to a great extent.

Stakeholders and factors perceived to have affected the companies' risk management strategies of the BFRs

In the above, it has been revealed that the Swedish desire to ban and regulate the BFRs in Sweden, as well as the government's approach to regulation of the BFRs in the EU, had been directed by four important stakeholders/factors. These stakeholders/factors were assumed to have also affected the industries' risk management strategies of the BFRs. However, the number of stakeholders/factors was enlarged to also include shareholders, customers, suppliers, employees, as well as various policy-guiding documents and corporate commitments to CSR principles and sustainable development. As displayed in Tables 2 and 3, the sampled companies rated the importance of 21 stakeholders/factors that were assumed to have affected the companies' risk management strategies for the BFRs. These results are elaborated upon in the Discussion of results section.

Table 2. Industry opinions regarding the most important stakeholders and factors perceived to have affected the companies risk management strategies of the BFRs.

Most important stakeholders/factors	Mean	S.D.	*n*
Internal policies/guidelines regarding sustainable development	4.7	0.49	8
The company's own application of precautionary measures	4.6	0.53	8
EU Directives	4.4	0.53	8
Internal policies/guidelines regarding CSR	4.2	1.11	8
The Swedish Chemicals Agency	4.1	1.06	8
PR incentives	4.1	1.07	8
EU risk assessments	4.0	0.58	8
Swedish application of the precautionary principle	4.0	1.15	8
Swedish research reports	4.0	0.82	8
Customers	3.9	1.07	8
Media	3.6	0.97	8

Note: Mean indicates the average rating of the sampled companies. 1 indicates that the stakeholder/factor was perceived to have influenced risk management strategies 'absolutely not', and 5 to a great extent.

Table 3. Industry opinions regarding the least important stakeholders and factors perceived to have affected the companies risk management strategies of the BFRs.

Least important stakeholders/factors	Mean	S.D.	*n*
Trade Unions	2.0	0.82	8
NGOs	2.3	0.49	8
Employees	2.9	1.20	8
Swedish government	2.9	0.69	8
Suppliers	3.0	1.41	8
Shareholders	3.0	1.15	8
Swedish 'green' lobby groups	3.0	0.82	8
Competitors	3.1	0.89	8
Consumer organizations	3.1	0.69	8
Business society organizations	3.1	0.69	8

Note: Mean indicates the average rating of the sampled companies. 1 indicates that the stakeholder/factor was perceived to have influenced risk management strategies 'absolutely not', and 5 to a great extent.

Discussion of results

Sweden has been one of the most active proponents for stricter chemicals regulation in the EU and nationally, and seemingly, these ambitions appear to also have affected the Swedish industry's opinions on, and risk management strategies for chemical risks. Regarding the hypotheses of the study, three were verified (H2, H5, H6) and three were falsified (H1, H3, H4), suggesting a more precautionary and responsible Swedish industry than expected.

In contradiction to the assumptions of the first hypothesis, the companies in the sample considered the Swedish government's application of the precautionary principle on average to be highly appropriate. Furthermore, all of the companies stressed that they used precautionary measures as guiding principles for their internal risk management efforts. This finding is in line with some previous data reported by Karlsson (2006), but not consistent with an extensive amount of research on industry companies and industry interest organizations elsewhere (Cefic 2002; Fredholm, Björling-Hambraeus, and Narvinger 2006; Graham and Wiener 1995; Löfstedt 2004, 2007; Lundblad 2005; Sanchez 2004; Sunstein 2002, 2005; Wiener and Rogers 2002).

In accordance with hypothesis 2, the sampled companies reported a moderately favorable view of the Swedish government's objective of a non-toxic environment. However, several of the companies stressed the benefits of international agreements as opposed to national goals, and pinpointed that national objectives are problematic since most products are imported to Sweden from other countries. A common view was that the main work for the achievement of a non-toxic environment should be handled in the EU, even though Sweden should take an active part in the EU agenda.

In contradiction to the assumptions in hypotheses 3 and 4, the companies were on average favorable to the reversed burden of proof as well as to the REACH Directive. These findings were not the expected ones. As before, much research indicates that industry and industry interest organizations display a negative opinion of the functioning of the current REACH framework (however, not the idea of an EU framework to handle chemical risks), and question the reversed burden of proof (Elliott and Elliott 2008; Renn and Schweitzer 2008; Löfstedt 2007). For example, the European Chemical Industry Council has stressed that the burden of proof should not lie solely on the industry, but rather, the responsibility should be shared between the industry and the authorities (CEFIC 2002, 2). In Sweden, the Swedish Plastics and Chemicals Federation has argued for a simplified, more coherent, and improved system to assess and regulate chemicals (Fredholm, Björling-Hambraeus, and Narvinger 2006; SPCF 2003).

Despite the findings that the companies in the sample favored national precautionary regulations, hypotheses 5 and 6 revealed some possible inconsistencies in the responses from the companies. These hypotheses were confirmed and revealed that the companies believed that the EU, based on scientific risk analysis, should primarily handle risk assessments and regulations. Many would argue that these findings somewhat contradict the outspoken strong support for national precautionary measures (e.g. Graham and Wiener 1995; Löfstedt 2004, 2007; Sunstein 2002, 2005; Wiener and Rogers 2002).

In response to the second objective (2) of the study, data displayed a rather coherent opinion among the companies. Notably, the companies stressed various

internal policies on sustainable development and CSR, as well as an internal precautionary approach to risk management, as a highly guiding principle for risk management strategies. Further, the companies stressed the EU (directives and scientific risk assessments) as well as the Swedish Chemicals Agency as important for their risk considerations. Surprisingly, the companies admitted that PR considerations had been guiding for their risk management work with the BFRs and moreover, the Swedish application of the precautionary principle, customers and the media were rated as important. On the other hand, trade unions and NGOs were believed to have affected the outcomes 'hardly not', while suppliers, shareholders, consumer organizations, business society organizations, employees, Swedish green lobby groups, the Swedish government and competitors were rated more neutrally.

Overall, there seems as if there are some inconsistencies between the openly positive approach to national precautionary measures and the predilection for scientific risk analysis, both regarding environmental/chemicals risk management in general and more specifically concerning the BFRs. In a somewhat tentative manner, these inconsistencies might be explained by a number of plausible factors and contextual issues.

The first explanation is historical and has been discussed in the text above. It suggests that the Swedish industry avoids confrontation and is not challenging authorities and the government. As displayed above, the history of chemicals regulation in Sweden has been characterized by broad consensus between various stakeholders and a non-challenging industry moving toward government's views more than the reverse. It is likely, but not certain, that this might have affected the present industry approach to the precautionary principle. Regarding hazardous substances management (such as the BFRs), the Swedish precautionary approach has been directed towards the substitution of chemicals and has been enforced on the Swedish industry (Karlsson 2006). Even though the companies in the sample prefer that chemicals are evaluated by the EU, using a risk analysis approach, there might be a legacy from previous national regulation, a legacy that is still affecting corporate thinking regarding these matters.

Second, Sweden is believed to be in the frontline of environmental regulation, sustainable development, and work to achieve CSR (Karlsson 2006; Weale 1992; European Panel for Sustainable Development 2006). A number of recent studies indicate that there is a shift in corporate thinking, moving towards the belief that the companies do have broad environmental and social responsibilities, while at the same time, there is a business case for working with the issues (Borglund 2006; Cooper 2004; Kallenberg 2007; ÖhrlingsPricewaterhouseCoopers 2008). Sustainable development and CSR principles do promote precautionary measures to some extent, and it is possible that the favorable opinions about precautionary measures come as a result of that. The companies may believe that a precautionary approach to risk management of chemicals is part of their social responsibilities. However, it might also be a matter of positioning, creating competitive advantages or maintaining of brand value. A former member of the Swedish Chemicals Agency's board commented on the results of the present study as follows:[7]

> The doubts regarding the industry's approaches to optimal risk management strategies is due to the very difficulty of assessing risk and communicating risk, but is also likely to have been affected by competitive strategy and PR considerations.

Interestingly, the sampled companies admitted that PR incentives as well as the media played an important role in forming their risk management strategies. This has also been found in other studies (e.g. Kallenberg 2007, 2008). To some extent, this is understandable, since several companies have suffered from media exposure regarding, e.g., the BFRs. For example, in 2007, Apple decided to stop using BFRs in their products, following criticisms by Greenpeace (TT 2007). If this decision came as a result of commitments to various CSR principles, or as an attempt to retain brand value and consumer confidence is not self-evident or easy to discern. To some extent it was probably a mix.

Finally, the companies' opinions of the precautionary principle might be related to the changing regulatory environment. It might be considered a competitive advantage to favor precautionary measures to meet future regulations and beat competitors. Not necessarily by reference to CSR principles or sustainable development, but rather to be well positioned if the regulatory environment changes. For the industry in Sweden, the regulatory process of the BFRs in general, and for DecaBDE in particular, has been exceedingly hard to grasp and evaluate. As reported above, based on precautionary measures, DecaBDE was banned in Sweden in January 2007. However, faced with a legal challenge from the EU authorities, and following the inconsistencies between the EU risk assessments and the national restrictions, Sweden lifted the ban in May 2008. The future regulative environment and the development of the regulations of the BFRs are by no means easy to evaluate. The final EU risk assessment of DecaBDE is due in 2010, and if further restricted, it will be a competitive advantage to have phased out this substance at an early stage.

Concluding remarks

The corporation has relationships with many constituent stakeholders that affect and are affected by its decisions. This seems particularly true regarding Swedish industry's management of chemicals and environmental risks. The present study indicated that the sample companies' chemicals (environmental) risk management was directed by a multitude of stakeholders, but notably, they were also likely to have been directed by historical factors, the Swedish precautionary approach to chemicals regulation, competitiveness, PR and current corporate and societal trends (such as CSR and sustainable development strivings). In brief, the study displayed some possible inconsistencies regarding the companies' preferable approaches of assessing risk as well as to the regulation of chemical (environmental) risks, and it points to the difficulty of understanding and navigating in a complex regulatory and business environment.

Notes

1. Registration, Evaluation, and Authorisation of Chemicals. The REACH Directive has become legally binding by 1 June 2007, and will be gradually implemented and brought into full force on 1 June 2018 (EC 1907/2006, 2006/121/2006).
2. For example, The Responsible Care Program, established by the Chemical Manufacturers Association in 1988, and The Voluntary Emissions Control Action Programme (VECAP),

established by the brominated flame retardant industry to manage, monitor and minimize industrial emissions of brominated flame retardants into the environment.

3. European Inventory of Existing Commercial Chemical Substances, EINECS, have listed about 100,000 substances, accounting for roughly 99% of the chemicals' volume on the market.
4. http://www.regeringen.se/sb/d/10626/a/104665.
5. The study was based on both primary and secondary data. The *secondary* data consisted of various official reports by the Swedish Chemicals Agency, as well as the European Chemicals Bureau and the Bromine Science and Environmental Forum (BSEF). Also, as regards the political ambition to ban BFRs in Sweden as well as in the EU, various documents such as government bills, meeting minutes and reports from the EU Council meetings on the environment were analyzed. As a complement to these official reports, the study built on a media content analysis displaying how the issue had been referred and analysed in various media between 1990 and 2007. As regards the *primary* data, interviews were conducted with stakeholders involved (directly and indirectly) in the regulative process of the BFRs. In total, 11 people were interviewed, using a semi-structured method. The respondents were four experts at the Swedish Chemicals Agency, three politicians in the former Social Democratic Government, one former member of the European Parliament, and two experts in the Department of Fire Technology, SP Technical Research Institute of Sweden.
6. The ban came into power on 1 January 2007.
7. Interviewed in December 2007.

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Employee attitudes to corporate responsibility: Evidence from Swedish industry

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ABSTRACT

Research into corporate responsibility (CR)[1] often relies on company publications and third party reports. Critics have argued that since such research does not take into account employee perceptions and attitudes to CR activities, it is not a satisfactory proxy for actual CR success. Motivated by the belief that employees are crucial stakeholders in the fulfillment of CR, this study aimed at investigating employee perceptions of and attitudes to CR importance and success as well as perceived incentives for CR activities. Furthermore, the study aimed at discerning to what extent external ratings are satisfactory proxies for actual CR success, as perceived by the employees. The sample consisted of 120 employees in three multinational industrial companies in Sweden. In brief, the study contributes the following four results: 1) There was a significant discrepancy between environmental responsibility (ER) and social responsibility (SR) ratings. This was true both regarding the perceived importance as well as the perceived success, where in both cases ER was considered more important and more successful than was SR. 2) Various personal attitudes and (corresponding) behaviors related to environmental issues was found to correlate with rated importance of CR. 3) PR and marketing incentives, compliance with regulation, and profit incentives were rated as more important reasons for CR than were external stakeholders such as customers, competitors, NGOs, and the financial markets. 4) There was support for the use of external ratings as a proxy for actual CR success, as perceived by the respondents.

INTRODUCTION

Over the past ten to fifteen years, the business context has changed significantly, with environmental and social factors increasingly affecting everyday business life. As a result of this development, various principles and policies on environmental risk management, operational risk

[1] Throughout the paper, *corporate responsibility* (CR) will be used as an all-embracing term incorporating concepts relating to e.g. environmental responsibility (ER), social responsibility (SR/CSR), corporate citizenship, and corporate governance. It has been argued that the difficulty of finding one coherent definition to corporate responsibility is highly problematic for the development towards more responsible business (Van Marrewijk, 2002, Stratling, 2007). A problematic consequence of the broadly-used CSR concept is the linkage to social rather than societal responsibilities. The broader 'corporate responsibility', or 'corporate citizenship' concepts are increasingly used to bridge the gaps in misinterpretations (Foster Back, 2005).

management, corporate responsibilities, and sustainable development have been incorporated into business plans, corporate guidelines, core value statements, and subsequently a broad array of business activities (Jallow et al., 2007; Smallman, 2000; Stratling, 2007). There has undoubtedly been a shift in business thinking regarding the responsibilities that a corporation has towards the surrounding society, employees, shareholders, and other stakeholders. The awareness and understanding of various social and environmental factors affecting day-to-day business as well as long-term strategies is today increasingly considered a crucial task for management in any company (Stratling, 2007). It has become clear that no business leader can afford to leave these issues unattended or unconsidered. More or less convincingly, companies engage in the 'greening of industry' and the more overwhelming concepts relating to CR (Cooper, 2004; Crane, 1995; Faragher, 2008; Gunningham et al., 2003; Graham et al., 1997; Stead and Stead, 2004; Vogel, 2005).

Much of the research originating from many disciplines stresses the importance of employee participation in organizations, and it has been argued that this is crucial also for CR activities (Dachler and Wilpert, 1978, Maclagan, 1999). There is a need for employees to be motivated and to have mutual, shared views as well as a coherent understanding of the benefits and challenges of CR. The very success of CR activities depends on employee acceptance of the issues (Maclagan, 1999; Van Buren, 2005; Wehrmeyer, 1996). In order to achieve a truly CR-committed company, employees' perceptions of and attitudes to CR activities have to be aligned with the values and visions of the organization. It is argued that this is particularly important for global companies working in multicultural contexts, such as the sample firms in this study (Collier and Esteban, 2007). Motivated by this reasoning, the objective of the present study is to investigate and analyze employee perceptions of and attitudes to CR.

Setting the CR stage

In the 1980s, the scope of corporate responsibilities (CR) was very much focused on environmental risk management in regard to emissions and waste from industrial processes. Central stakeholders were regulators and various non-governmental organizations (Ljungdahl, 2008). However, it was not until the 1990s that environmental risk management was increasingly stressed as a completely corporate responsibility. Driven by factors such as globalization, outsourcing, and increased public concerns of environmental problems, a proactive work with environmental issues

was increasingly considered to be a competitive advantage. Environment versus competitiveness became a false dichotomy (Godfrey, 2005; Ljungdahl, 2008; Porter, 1998). By changing industry processes in order to decrease negative environmental impacts, more efficient use of resources, new technological methods for improved recycling, waste management, and emissions control, companies decreased their own risk exposure, the risk for their employees, their communities, and society at large. Consequently, these activities lessened the risk of consumer punishment, fining, litigation, and negative media exposure (Anderson, 1999; Vaughan and Mulliken, 2007). Moreover, it has been suggested that such activities are likely to affect factors such as internal and external corporate trust, PR, reputation, employee satisfaction, productivity, and, by extension, profits (Graham et al., 1997; Hillenbrand and Money, 2007; Ljungdahl, 2008; Stead and Stead, 2004).

In 1987, The World Commission on Environment and Development formulated the most widely and often-quoted definition of sustainable development:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987, p. 43).

At that time, the focus was still highly environmental, and later definitions have also increasingly stressed the need for a sustainable approach to social as well as economic factors.[2] For example, in 1992, the International Institute for Sustainable Development (IISD) adopted the following definition applicable to business:

> For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.

In the 1990s, issues on sustainable development were increasingly highlighted in international forums such as the 1992 Earth Summit in Rio de Janeiro, followed up at the World Summit of Sustainable Development in Johannesburg in 2002. The importance of CR was increasingly acknowledged by the EU,[3] various business forums (e.g. CSR Europe, World Business Council for Sustainable Development, WBCSD), and

[2] Commonly referred to as the triple bottom line (Elkington, 1998).
[3] The EU Sustainable Development Strategy was adopted in 2006 and applies to all EU policies (http://ec.europa.eu/sustainable).

non-profit organizations (e.g. International Institute of Sustainable Development, IISD). It was also established as a prioritized focus area in the UN (Commission on Sustainable Development, CSD).

In the early 2000s, a broader stakeholder interest for CR lifted the agenda above environmental risk management and compliance. Social as well as economic factors were increasingly highlighted, and many companies implemented various CR principles that go beyond mere risk management, involving normative, ethical, and responsibility factors of business life (Clapp, 2005; Cooper, 2004; Elkington, 1998; Örhlings Price Waterhouse Coopers, 2008). Such CR principles suggest that the corporation has responsibilities that include economic, legal, moral, socio-economic, and charitable objectives (Stratling, 2007). Carroll (1979, 1999) developed a much-cited CR (CSR) model relating to four categories of responsibilities: economic, legal, ethical, and philanthropic responsibilities.

According to Carroll, the first and foremost social responsibility for a company is the economic responsibility, that is, to generate profits. Other corporate responsibilities are subordinate to this goal. However, Carroll (1979, 1999) underscored that companies are expected to comply with laws, regulations, and society's institutional framework. Moreover, they are expected to adapt and honor various ethical norms present in the society, voluntary codes of conduct, and philanthropic responsibilities that might exceed society's minimum expectations. Carroll's recognition that the foremost responsibility is economic responsibility is at the very core of many academic and business discussions and critics of CR. It highlights the issue of to what extent it is rational and reasonable to accept CR initiatives that does not, in one way or another, contribute to profits. This controversy has spurred critics to dismiss the current hype of CR and CSR (Freeman and Liedtka, 2001, Stratling, 2007), and points unerringly to the question of what companies should be responsible for.

Criticism of CR

To a great extent, critics of the development of more CR base their arguments upon the early and much-cited ideas of Milton Friedman (1970). Friedman argued that only people have responsibilities, and that a corporation may have only artificial responsibilities, such as legal ones. Corporations should only take into account the wishes of its owners, that is, they should not be concerned with philanthropic activities unless they improve profitability or are an expressed wish of the owners.

Later critics have built on the ideas of Friedman, and Jensen (2001) stressed that even though there might be other goals than profitability, CR activities should only be legitimized if classed as "strategic" CR. In addition to this, Friedman based his critique on the belief that managers lacked abilities to select important social issues. Moreover, he was concerned about the legitimacy of managers spending money on CR activities. He argued that such activities resulted in reduced profits, higher prices, or lower wages for the employees (Friedman, 1970; Stratling, 2007).

More recent critics have stressed that companies apply various window-dressing and greenwashing incentives to CR, such as marketing incentives, positioning, and the urge to improve brand value and to avoid bad media monitoring, rather than true CR commitment or altruistic considerations (Gunningham et al., 2003; Marchant and Mossman, 2004; Vogel, 2005; Weaver and Trevino, 1999). In line with the difficulty of discerning the genuine commitment, and company incentives to CR, it has been argued that the benefits of CR activities – the direct contributions to bottom line results – are seldom easily calculated (Fisman et al., 2005; Ljungdahl, 2008; Margolis and Walsh, 2001; Örhlings Price Waterhouse Coopers, 2008).[4] However, there seems to be at least some evidence that CR-committed companies are not doing worse (Cooper, 2004; Ljungdahl, 2008; Orlitzky et al., 2003; Roman et al., 1999).

Research into CR

A problematic feature of CR research is that it is often based on content analysis of company publications, such as annual reports, CSR reports, company web pages, as well as third-party reports by, for example, media or interest groups (Balabanis et al., 1998; Linnenluecke et al., 2007; Stratling, 2007). Such reporting is frequently considered a proxy for company involvement and success of CR (Linnenluecke et al., 2007). However, as such research normally does not take into account employee perceptions and attitudes to CR activities, it has been criticized for being biased and for lacking validity, comparability and reliability (Linnenluecke et al., 2007; Ramasamy and Ting, 2004; Stittle, 2002; Stratling, 2007). [5] It has been argued that such ratings have little

[4] It has been argued that a causal relationship between CR activities and financial performance is hard to establish since many CR-oriented companies are already characterized by healthy management and good performance (e.g. Vogel, 2005).

[5] It has been argued that employee involvement is a crucial prerequisite for the success of CR implementation and activities (Collier and Esteban, 2007; Maclagan, 1999; Van Buren, 2005; Wehrmeyer, 1996).

predictive power of actual CR performance since companies that want to enhance their CR (environmental) image can do this in one of two ways. They can do it by actually working with the issues (e.g. by reducing their impact on the environment), or by merely appearing to do so via marketing efforts or greenwashing (Chatterji et al., 2007). This strategic duality stresses the difficulties in judging companies' CR success, and whether a 'true' CR commitment is important or not.

Scope of study

Based on the difficulties of answering the questions of 'whether' and 'why' companies should engage in CR, this study aims at moving beyond mainstream research into CR. The objective is motivated by a previous paucity of research on employee perceptions of CR (Linnenluecke et al., 2007). The study addresses the following research questions:

- To what extent do employees perceive various CR activities as important?
- Are employee' ratings of CR importance related with employee' background factors, attitudes or behaviors?
- How do employees rate success of their firms CR activities?
- How do employees perceive various corporate incentives for activities on CR?

Besides these research questions, and in line with the challenging criticism and previous lack of research into the accuracy of external company CR ratings (Chatterji et al., 2007, Stratling, 2007), the study also aims at responding to this question:

- Are CR ratings, based on company publications such as annual reports, CR, CSR, and sustainability reports, satisfactory proxies for CR success, as perceived by the employees?

The present study is based on data collected by questionnaires in February 2006.[6] Internal data loss was low with 0.93 percent non-answered or overlooked items. These were replaced by mean values. The mean time for completing the questionnaire was about 40 minutes. As many of the items were of a sensitive character, data will be handled as aggregates and the companies are referred to as Firms A, B, and C.[7]

Respondents

The sample consisted of 120 respondents, which corresponded to a response rate of 48 percent. Eighty-five (71 percent) of the respondents were males, and 35 (29 percent) were females.[8] The mean respondent was in the age range of 40-50 years old. Forty-two of the respondents worked at Firm A, 37 at Firm B, and 41 at Firm C. The questionnaires were delivered to white-collar employees within four occupational functions at the central offices of the three firms. Four contact persons at the firms helped to deliver the questionnaires, which were then anonymously sent back by mail. Of the respondents, 47 gave manager as their field of work, 11 economic/financial work, 34 environmental work, and 28 "other than above".

Company characteristics and CR ratings

The three firms in the sample are industrial multinationals. They were chosen on the basis of being highly ranked in external CSR/CR indexes (see below), and were characterized by 'heavy' industrial production involving potential operational risks such as environmental risk, occupational risk, and process risk. At the time of data collection, Firm A employed roughly 110,000 employees worldwide, (9,000 in Sweden), Firm B 26,000 (3,000), and Firm C 82,000 (27,000).

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[6] A pilot study was conducted in December 2005, and a reminder was sent out in March.

[7] In order to distinguish sample companies from companies in general, I have designated these as Firms A, B, and C.

[8] The sample from each of the firms consisted of a somewhat higher frequency of women compared to the companies' demographics (Folksam, 2008; Jämo, 2007).

As regards the CR ratings of the three firms, collected data was benchmarked with the Globe Forum Business Network (GFBN) CR index. Based on content analyses of websites and external communication, the index has been assumed to indicate to what extent companies engage in, communicate, and succeed with CR-related activities. Companies included in the index (n=67) are scored on various CR-related variables adding up to a maximum of 40 points. The mean value for all companies in the survey was 18.9. The three sample firms scored: A (35), B (28), and C (37), indicating that they were highly involved in and committed to principles of CR.[9]

Questionnaire

The questionnaire comprised 350 items focusing on two related themes. The first part consisted of five sub-sections focusing on the following topics:[10]

- Environmental attitudes and involvement (8 items).
- Knowledge of CR (21 items).
- Perceived importance of CR (10 items).
- Perceived success of CR (3 items).
- Perceived reasons for firm's activities on CR (19 items).
- Personal background factors (5 items).

As regards the items used in the present study they are either easily accessible in the text/tables, or displayed in the Appendix. Items were rated (if not stated otherwise) on a five-point scale ranging from "do not agree at all" (1) to "agree to a great extent" (5), or from "not at all important/successful" (1) to "very important/successful" (5). As regards knowledge of CR-related concepts, the scale ranged from "do not know at all" (1) to "know very well" (4).

[9] Mean value of indices for 2005 and 2007.

[10] The second theme was more extensive and focused on general/personal risk perceptions, occupational risk, and operational risk management. These variables were not used in this study.

RESULTS

Environmental attitudes and perceived importance of CR

The overall view on the development of the environment (in a general sense) was rather pessimistic. About 76 percent of the respondents believed that the environment would get worse or get worse to some extent, compared to about 19 percent who stated it will improve substantially or improve to some extent.

Possibly, as a consequence of the adverse opinions on the future state of the environment and the vast challenges in achieving a sustainable society, the respondents granted great importance to the issue of CR (total CR). More than 80 percent of the respondents were of the opinion that CR activities are important or very important.[11] As displayed in Table 2, there were on average small differences in importance ratings of CR between respondents originating from the three firms. As regards some background variables, there were no significant differences in mean rating of perceived importance (total CR) as to gender, age, education, occupational role, or political party preferences. However, as seen in Table 1 there were other personal attitudes/behaviors that were signify-cantly correlated with the rated importance of CR.

Table 1 Mean and S.D, and correlations between 'rated importance of total CR' and respondent attitudes/behavior

Personal attitudes/behavior	**Mean**	**S.D.**	**r**	
Knowledge of CR concepts*	2.28	0.44	.25	**
I have a moral responsibility to improve the environment	3.81	0.86	.31	**
I am an environmentally involved person	3.56	0.94	.40	**
I try to reduce my use of energy/electricity in order to improve the environment	3.84	0.91	.26	**
I believe it's important to sort my refuse	4.10	0.91	.20	*
Environmental problems are temporary imbalances that will self-adjust	2.12	0.95	-.25	**
There is a need to reduce fossil fuel dependence (gas and oil)	4.79	0.95	.27	**
There is a need to reduce consumption of products	3.77	1.06	.10	
Companies have a responsibility to improve the environment	4.32	0.71	.29	**

Note. *Index of 21 items, Cronbach's Alpha: 0.852. See Appendix for items, *p<0.05 **p<0.01. *Note.* Data show mean ratings among all respondents in the sample. Items related to knowledge of CR concepts were rated from 1 to 4 (with 1 indicating: 'Do not know at all', 5: Know very well. Remaining items were rated from 1 to 5 (with 1 indicating: 'Do not agree at all', 5: 'Agree to a great extent').

[11] See Appendix for items.

The correlations in Table 1 may indicate that various personal attitudes and (corresponding) behaviors affect the way people perceive the importance of corporate activities with CR (even though not self-evident). Notably, there were rather strong correlations between rated CR importance and the perceptions that 'I am an environmentally involved person,' and 'I have a moral responsibility to improve the environment.' However, various behaviors relating to the improvement of the environment, as well as the opinion that companies have a responsibility to *improve* the environment (rather than just to take care of their waste) also correlated with the rated importance of CR. As put forth in the literature review, it has been argued that the very success of CR activities depends on employee acceptance of the issues (Maclagan, 1999; Van Buren, 2005; Wehrmeyer, 1996). The results may indicate that various CR activities are likely to be accepted by some employees but more reluctantly accepted by other.

Furthermore, data revealed that the respondents rated different types of CR activities at varying levels of importance. As can be seen in Table 2, the respondents in the three firms rated the importance of environmental CR (ER) as between 4.57- 4.80, while social CR (SR) was considered less important (3.87-4.03). Thus, there was a tendency to attribute higher values to environmental CR, compared to CR activities relating to social factors (such as occupational risk mitigation, employee safety, or various humanitarian projects)(all $p<0.05$).

Table 2: Mean values and S.D. of perceived importance of CR (Regarding total CR, ER, and SR)

Firm	**Total CR**	S.D.	**ER**	S.D.	**SR***	S.D.
A	4.10_{x}	0.72	4.60_{y}	0.53	3.87_{xz}	0.46
B	4.11_{x}	0.90	4.57_{y}	0.64	4.03_{xz}	0.48
C	4.22_{x}	0.79	4.80_{y}	0.46	4.01_{xz}	4.45

Note. Data above show averages among employees in Firm A,B,C. Items were rated from 1 to 5 (with 1 indicating not at all important and 5 very important). *Note.* Full sample. Means in the same row that do not share subscripts differ at $p< .05$ (Paired-Samples T-test). (e.g. Firm A: Total CR and ER sign. Total CR and SR not sign). *Note.* * Index of 8 items, Cronbach's Alpha: 0.72. See Appendix for items)

Overall, the respondents had a moderately positive view to the success of their respective firms' CR activities.[12] As displayed in Table 3, respondents at Firms A and C rated total CR success higher than did Firm B respondents (A, 3.85, C, 3.75, and B, 3.28). Moreover, the respondents rated their firms' environmental CR activities as significantly more successful than social CR activities (all $p<0.05$).

Table 3
Mean values and S.D. of perceived success of CR (Regarding total CR, ER, and SR)

Firm	**Total CR**	S.D.	**ER**	S.D.	**SR**	S.D.
A	3.85_x	0.62	4.0_y	0.60	3.59_z	0.79
B	3.28_x	0.81	3.78_y	0.85	3.36_{xz}	0.90
C	3.75_x	0.63	3.93_y	0.79	3.59_{xz}	0.88

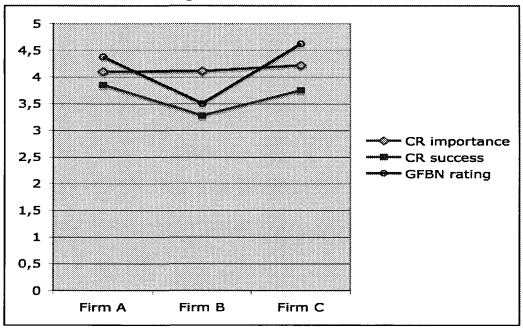
Note. Data above show averages among employees in Firm A,B,C. Items were rated from 1 to 5 (with 1 indicating not at all successful and 5 very successful).
Note. Full sample. Means in the same row that do not share subscripts differ at $p< .05$ (Paired Samples T-test). (e.g. Firm B: Total CR and ER sign. Total CR and SR not sign).

As seen in Table 3, there was a clear tendency for employees in Firms A and C to rate their firms as more successful than did Firm B employees. ANOVA-test showed (MS=3.49, $F(2, 116) = 7.32$, $p < 0.01$). Tamhane's post-hoc test indicated that the respondents of Firm A and Firm C held similar opinions about CR success, whereas respondents of Firm B differed significantly from those of Firm A (mean diff: -0.58, $p<0.01$) and those of Firm C (mean diff: -0.47, $p<0.05$).

With regard to the perceived success of CR activities, recall that an aim with the present study was to investigate whether 'objective' CR ratings may be used as satisfactory proxies for actual CR success, as perceived by the respondents. Since the firms in the sample scored A=35, B=28, and C=37 (Max=40) on the GFBN index, while the mean values of perceived CR success were (3.85, 3.28, and 3.75, respectively), the comparison indicates that such 'objective' ratings do in fact have some predictive power. It should be mentioned here however, that the number of observations is too small to be conclusive at a general level. In Diagram 1, the respondents mean ratings of perceived CR importance, CR success, as well as the external GFBN ratings are shown.

[12] See Appendix for items.

Diagram 1: Ratings of importance, success, and the GFBN ratings.



Note: Data show averages among employees in Firm A,B,C. Note: The GFBN ratings have been transformed (Max =40=5).

Perceived reasons for firm's activities on CR

As underscored earlier, the respondents rated environmental responsibility (ER) as more important than social responsibility (SR). In order to further investigate the respondents' perceptions of and attitudes to CR activities, they were asked to rate the importance of various stakeholders and incentives as important reasons/driving factors for firm's activities on CR. Since there were no significant differences between respondents originating from the three firms, data is presented as an aggregate of the total sample ratings. The perceived reasons for environmental CR (ER) are displayed in Table 4, whereas the perceived reasons for social CR (SR) are shown in Table 5. It is crucial to stress that the perceived reasons (driving forces) assumed to affect firms' CR strategies were both internal incentives and external stakeholders.

Table 4: Employee' mean ratings (S.D.) of reasons for firm's activities on ER.

Perceived reasons for ER	**Mean value**	**S.D.**
Swedish law	4.52	0.66
EU directives	4.51	0.61
PR/Marketing	4.39	0.56
Profits	4.15	0.76
Employee safety	4.11	0.89
Altruistic incentive of improving the environment	3.88	0.94
Competitors	3.83	0.87
Customers	3.77	0.97
Financial markets	3.47	1.07
Non-Governmental Organizations (NGOs)	3.06	1.01

Note. Data indicate mean ratings among all respondents in the sample. Items were rated from 1 to 5 (with 1 indicating totally unimportant reason and 5 very important reason).

Table 5: Employee' mean ratings (S.D.) of reasons for firm's activities on SR.

Perceived reasons for SR	Mean value	S.D.
PR/Marketing	4.39	0.59
Swedish law	4.27	0.90
Occupational risk mitigation	4.20	0.73
Profits	3.64	1.00
Competitors	3.55	0.91
Altruistic incentive of improving social issues	3.50	0.89
Financial markets	3.18	1.06
Customers	3.12	1.06
Non-Governmental Organizations (NGOs)	2.97	1.03

Note. Data indicate mean values among all respondents in the sample. Items were rated from 1 to 5 (with 1 indicating totally unimportant reason and 5 very important reason).

Tables 4 and 5 indicate to what extent the respondents perceive various stakeholders and firm's incentives as important reasons/driving factors for firm's activities on CR. In brief, the ratings indicated that for both environmental CR (ER), and social CR (SR), regulators, PR and marketing, and profit incentives were perceived as highly directive for the firms' CR activities/strategies. Other external stakeholders such as the financial markets, customers, competitors, and NGOs were perceived to play a less important role.

DISCUSSION

Activities relating to CR have become important for many companies. Promoted by a multitude of stakeholders, responsibilities put on companies have increased in scope and scale. Even though sometimes criticized, this development has been welcomed and become a crucial part of doing business in the 21st Century. However, there are crucial issues that need to be addressed. As Tullberg (2005) underscored, it is important to raise the questions of what companies should be responsible for, and what is a legitimate level of responsibility. Based on the idea that employees are an important stakeholder group to take into consideration in the development of CR strategies (Collier and Esteban, 2007; Maclagan, 1999; Van Buren, 2005; Wehrmeyer, 1996), this study aimed at identifying which CR activities are perceived as important by the employees, and also at displaying the perceived success of the firms' various CR activities. Furthermore, the study aimed at showing the perceived reasons for CR activities, as well as relating perceived success to the external GFBN rating of the companies.

Starting off with a section on attitudes to the environment, data revealed that there were no significant differences of CR importance ratings as to firm association, age, gender, education, occupational role, or political party preferences. However, on some personal attitudes/behaviors, such as knowledge of CR, personal involvement in the environment, refuse sorting, and energy saving, there were significant correlations with the rated importance of CR. As described in the literature review, the success of CR activities is believed to depend on employee acceptance of the issues. In order to achieve a truly CR-committed company, employees' perceptions of and attitudes to CR activities have to be aligned with the values and visions of the organization (Maclagan, 1999; Van Buren, 2005; Wehrmeyer, 1996). As shown, there was an overall support for CR, but at an individual level, various personal attitudes and (corresponding) behaviors might influence how people tend to perceive the importance of CR. This result underscores the difficulties of creating a 'mutual' and 'shared' view within an organization, and may clearly be an interesting starting point for further research into CR.

As regards the rated importance of total, environmental, and social responsibility, there were small differences in employee ratings between the three firms. Notably, though, they all rated environmental CR as significantly more important than social CR.

Moving beyond the obvious establishment that the respondents *de facto* perceived ER to be more important than CR, I would argue for three developments that may account for this difference. Firstly, following much public concern and media reporting on climate change and other environmental risks, environmental considerations are constantly present in almost every part of society (Ljungdahl, 2008). Therefore, as it is mostly companies that are responsible for environmental risk exposures, environmental risk management has increasingly been pointed out as a self-evident and completely unchallenged corporate responsibility. Secondly, environmental risk management and environmental CR have a longer track record than social CR (Rämö, 2003). There is therefore a greater familiarity and consequently a greater acceptance of CR activities relating to environmental risks. Thirdly, environmental risks are easier to operationalize. They are easier to access, measure, communicate, and attribute to profits (Rämö, 2003; Welford, 1995, 2000).

Concerning the perceived success of CR there was a similar pattern to that of rated importance of CR. The respondents rated their firm's environmental CR as significantly more successful than social CR. In line with the external GFBN index, the CR success ratings (total CR) differed significantly between the three firms, indicating that Firms A and C were more successful than Firm B. As discussed previously (in 'research into

CR'), ratings such as the GFBN index have been criticized for lack of validity and reliability. Nevertheless, they are frequently used as proxies for actual commitment, involvement, and success of CR activities (Balabanis et al., 1998; Campbell et al., 2003; Stratling, 2007). Even though it could be argued that the comparison between the respondents' CR success ratings and the GFBN index is simplistic, and the number of observations is limited, the findings of the present study legitimize the use of external ratings as a proxy for CR involvement and success. [13]

As regards the perceived firm's reason for CR activities, data revealed that PR and marketing incentives were perceived as a highly important driving factor, both regarding environmental CR and social CR. Furthermore, regulators and profit incentives were considered more important than other external stakeholders such as customers, NGOs, and the financial markets. These results might certainly satisfy some critics. However, since CR is nowadays a fundamental part of business, in which a broad array of stakeholders take a great interest, there is also a need for transformation and reappraisal of companies' brand management (Lewis, 2003). There is a need for companies to engage in strategic CR in order to improve the reputation of their brands for marketing purposes (Stratling, 2007). In line with this reasoning, I believe that a high PR/profit rating is not necessarily a sign of a critical opinion to CR activities as some would argue. It might rather indicate that employees accept CR activities, even though on strategic grounds. PR and marketing incentives do not necessarily have to be a sign of greenwashing or window-dressing, but might rather be accepted as an important and integral part of CR.

To conclude, there was an overall strong support among the respondents for CR activities, but in all the firms there was a difference between importance ratings and success ratings. In response to the wishes of the respondents of the three firms, CR activities and resources should to a greater extent be directed to environmental CR, which was perceived as a significantly more important task than was social CR. The study stresses the importance of listening to the employees in order to spur acceptance, and increase the knowledge of CR. Activities in corporate responsibility cannot solely be a matter of accepting external pressures from various stakeholders, but rather, there is a need for employee participation in the process.

[13] However, Firm C respondents ought to have rated CR success slightly higher than Firm A respondents.

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APPENDIX A

Perceived importance of CR

- How important do you believe CR activities to be? (total CR)
- How important do you believe environmental CR to be? (mitigation and management of environmental risks)

To what extent do you find the following activities of social factors CR important?

- Social/humanitarian projects in developing countries
- Social/humanitarian projects in the company in general
- Improvement of job satisfaction at your job site
- Improvement of employee health
- Improvement of employee safety
- Fund-raising and contributions in case of a catastrophe (e.g. the Tsunami)
- Supporting cultural events
- Limitation of outsourcing of production to developing countries

Knowledge of CR

How well do you know/are you familiar with the following concepts/organizations?

(concepts/organizations retrieved from the firms' websites and annual/CSR/sustainability reports).

Global Reporting Initiative, FTSEGOOD, Lifecycle Analysis (LCA), Life Cycle Costs (LCC), ISO 7000, Human Rights Watch, Transparency International, Swedewatch, WWF, Dow Jones STOXX, ISO 14001, emissions allowance system, the GATE-model, OHSAS 18001, WTO, Amnesty International, Greenpeace, Unicef, WHO, Global Compact, Swedish Code of Conduct.

Perceived success of CR

How successful do you believe that your firm is regarding the following CR activities:

- Total CR
- Environmental CR
- Social factors CR

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