



INTRODUCTION

The study of risk and the practice of risk management are not new. *Risk* is an ever-present aspect of personal and organizational life, reflected in the future outcomes associated with investment decisions, human resources, new products and services, and the management of supply chains. Although originating fairly recently, supply chain risk management has become a recognized and well-established field, resulting in the development and dissemination of new models, tools, and techniques to understand and manage supply chain risk.

The purpose of this handbook is to capture and provide business professionals, researchers, and students with a collection of cases that illustrate how organizations can assess and manage threats to business continuity, while providing insights into practices that can create robust and resilient firms. Like all developing fields of study, supply chain risk management draws on a range of disciplines and fields. The contributing authors approach this subject from different perspectives, thus enriching the collection of cases. The cases have been selected to appeal to professionals in a range of sectors, from healthcare to aerospace, while retaining a core focus on supply chain risk management.

To provide a background to risk and supply chain risk management, the editors deliberately avoided prescriptive definitions of concepts, preferring instead to encourage contributors to explore the concepts, models, and theories appropriate to their specific sectors, case study contexts, and disciplinary perspectives. This approach is intended to contribute knowledge and understanding into the extensive practice-oriented fields. The remainder of this introduction explains the structure of this handbook, including the rationale for structuring the collection of case studies in two key parts.

SUPPLY CHAIN RISK MANAGEMENT

Before entering into a discussion on supply chain risk, it is important to provide the reader with some background on the term *risk*. The word risk is derived from the early Italian word *risicare*, which means *to dare* (Bernstein, 1996). However, the term's meaning has evolved over time, and today it means different things to different people, depending on their individual perceptions of the world. A key component of risk is *choice*. Bernstein (1996) maintains that risk is about choice: "...the actions we dare to take, which depend on how free we are to make choices, are what the story of risk is all about."

Risk encompasses both the possibility of loss and the hope of gain. Nevertheless, in looking at how organizations perceive risk, it is the negative connotation of risk—loss rather than gain—that seems to preoccupy managers. This is especially the case with large engineering projects, such as petro-chemical plants and nuclear power stations, where the consequences of failure can be catastrophic, effectively illustrated by cases in Part I. Not surprisingly, the emphasis on negative consequences is the area where most development work has been carried out on formal risk assessment procedures, as demonstrated by cases in Part II.

In the United Kingdom, the Royal Society (1992) established a working party to investigate risk and risk assessment. It stressed the negative elements of risk, defining *risk* as "... a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence." In research, too, risk has continued to be discussed as the *severity of adverse effects* and the *potential for unwanted negative consequences*, which may have an "effect on the achievement of the project's objectives."

It is important to note that risk is context-dependent. Therefore, risk can be defined as a subjective expectation of loss; hence, the greater the probability of loss, the greater the risk for the individual or organization. Furthermore, depending on context, there may be significant gains expected from taking a risk; therefore, risk cannot only be defined as a negative or unwanted expectation.

This raises an important question that many researchers appear either not to be aware of or prefer to avoid: is risk something that can be objectively measured and agreed upon by all concerned or is it something which is subjective and based on individual perception? The issue of whether risk can be measured objectively or whether it is based on a subjective viewpoint will have a significant impact on how the various parties in a supply chain relationship perceive and attempt to manage risk.

The viewpoints on risk range from the scientific perspective, which sees risk as objective and measurable, to the social constructionist perspective, which sees it as being determined by social, political, and historical situations. Taking the latter perspective, it has been argued that the nature of any potential loss, its significance and the estimated chance of it occurring, are personal to the individuals concerned, for example, the result of risk-taking can be perceived as positive by some, but negative by others, giving risk a subjective dimension. But there are many engineers and physical scientists who tend to see risk as objective, quantifiable, and manageable.

Over the years, a number of well-used tools for quantifying and managing risk have been developed. These include: failure mode effect analysis (FMEA), cost benefit analysis (CBA), and risk benefit analysis (RBA). Although accepted by many managers, they have been criticized for removing the element of human judgment from decision-making by disguising underlying assumptions with mathematical formulae.

The debate between those who see risk as objective and those who see it as subjective is an ongoing one, which will not be resolved in this book, if indeed it is resolvable at all. It is necessary, though, to recognize that such a debate is taking place, and that it does have significant implications for how risk is seen and managed. It is also necessary to recognize that most people who are studying supply chain risk management do not appear to recognize that there is a debate over its nature. While most contributors use terms such as *perception* and *perceived* (Cousins, et al., 2004; Kraljic, 1983; Williamson, 1979), indicating a subjective rather than objective perspective, others use *probability* (Harland et al, 2003), indicating a more objective perspective. Nevertheless, the issue of whether risk is a subjective or objective construct does not appear to be acknowledged in the supply chain literature. Whether one views risk from a subjective or objective standpoint, the key question for organizations is: How can risk be managed?

There seems to be general agreement on what the risk management *process* should be, and it typically combines the following three stages:

- Risk Identification—determine all risk factors that are likely to occur on a project.
- Risk Analysis—understand the likelihood and extent of the most significant risks.
- Risk Evaluation—decide on the most appropriate management response for each risk/combination of risks and which party is most appropriate to manage each of the risks identified.

Most professional bodies that deal with risk take the view that:

Risk management should be a continuous and developing process which runs throughout the organization's strategy and the implementation of that strategy. It should address methodically all the risks surrounding the organization's activities past, present and in particular, future. It must be integrated into the culture of the organization with an effective policy and a program led by the most senior management. It must translate the strategy into tactical and operational objectives, assigning responsibility throughout the organization with each manager and employee responsible for the management of risk as part of their job description. It supports accountability, performance measurement and reward, thus promoting operational efficiency at all levels. (IRM/AIRMIC/ALARM, 2002, 2).

Therefore, though risk assessment is important, and although there is general agreement about the risk management process, there is much debate and disagreement as

to the validity and usefulness of the tools and techniques that have been developed to operationalize the process. In practice, it has been reported that top business leaders tend to prefer approaches to risk management that combine subjective and objective measures because it allows them some freedom to maneuver rather than being pushed into making decisions based solely on numerical analysis.

Another reason why top managers may wish to keep their options open is that risk can impact the various stakeholders in a business differently. For example, the personal risk to an individual foreign exchange trader speculating on currency fluctuations may be small, but the risk for the person or body whose money is being used for the speculation may be large. Therefore, managers may need to balance the interests of different stakeholders rather than seeking to minimize risk altogether. In any case, given that there is no consensus as to the most appropriate strategies for managing risk, even if it were possible to calculate the nature and likelihood of a particular risk, it is unlikely to be clear how best to respond to it.

It is not surprising to see writers shifting the focus of attention away from analyzing and managing risk at the level of individual customers and suppliers, and toward the understanding and management of risk at the level of the entire supply chain. It can be argued that supply chain risk management, as opposed to supply chain management, is appropriate terminology to define the long chain of decisions that result in the production of goods and services, as these are accompanied by an equally long chain of risk. The increasing globalization, complexity and dynamism of supply chains are leading to greater exposure to risk from political and economic events; hence, disruption to supplies in one country can quickly spread through an entire global supply chain. An example is the sharp increase in world oil prices caused by the disruption of U.S. oil production brought about by Hurricane Katrina. The contributors have provided cases that illustrate global supply chain risks and disruptions to supply caused by natural disasters in Part I. Hence, risk management should focus on positioning the organization to try and avoid such events, and to develop strategies to manage the impact of them should avoidance not be possible. This is where the design of appropriate tools and techniques becomes an important issue, and we have outstanding case examples of these in Part II.

There is no doubt that managing supply chain risk has become a vital activity for most organizations, particularly as supply chain risk is unlikely to lessen in the near future, given the increasing trend toward globalization. Globalization has exacerbated supply chain risk, and the need for suitable tools, approaches, and methods to manage risk has never been greater.

STRUCTURE OF THE BOOK

This book comprises a collection of cases, each designed to illustrate dimensions of effective practices that firms engage in to manage supply chain risk. The cases have a practical orientation, designed to illustrate how practicing managers and students

can create processes, systems, and approaches to reduce the likelihood and financial impact of risk in their firms and supply chains.

Reflections on risk management suggest that supply chain risk management is a very diverse and complex field of study, incorporating a variety of perspectives and arguments concerning appropriate responses to anticipated and realized risks. There are two distinctive groups of factors highlighted within this text. First, the identification, mapping, and managing of risks in global supply chains, and second, the design and application of appropriate tools and techniques to evaluate and mitigate such risks. As such, this handbook is divided into two parts:

- Part I: Managing Risk in Global Supply Chains
- Part II: Tools, Techniques, and Approaches

There are several emerging themes within each part, illustrated by the collection of case examples provided. Although cases have been allocated to the most appropriate part, it is inevitable that some cases apply across themes in both parts. For example, a case may present the context and structure of a global supply chain and develop the elements of the framework by providing a specific approach for managing the global supply chain risks. Each Part commences with a brief introduction and explanation of the themes, followed by short summaries of each case explaining the relevance and contribution to the themes of the Part. Each case is then presented.

OBJECTIVE OF THE BOOK AND TARGET AUDIENCE

As alluded to previously, supply chain risk has become of primary concern to many businesses today. Firms have become more dependent on their suppliers and customers for financial success. However, processes and performance are often difficult to assess outside the boundaries of the respective firm, potentially leaving the firm vulnerable to the unknown. This handbook provides business professionals and students insight into practices that can result in creating more robust and resilient firms in the face of supply chain risk. The aim of this book is to provide illustrative case examples of how firms can proactively manage risk in order to improve overall business performance.

There are currently several books that exist which focus on various aspects of supply chain risk. However, to our knowledge, there is no comprehensive collection of diverse practices that managers can adopt to manage supply chain risk other than this one. The intended audiences are professionals, experts, academics, and researchers who are working, or intend to work, in the fields of supply chain risk management, business continuity management, strategic management, or business management. Additionally, select BA and MBA programs that have a focus or concentration in supply chain management are other intended audiences. This handbook may be used in the classroom to inform students about how supply chain risk manifests itself in

firms, as well as to provide a set of tools that they can adopt or potentially suggest to future employers.

REFERENCES

- Bernstein, P. (1996). *Against the Gods: The Remarkable Story of Risk*. Chichester: John Wiley.
- Cousins, P., Lamming, R. C., and Bowen, F. (2004). The Role of Risk in Environment-Related Initiatives. *International Journal of Operations and Production Management*, 24(6), 554–565.
- Harland, C., Brenchley, R., and Walker, H. (2003). Risk in Supply Networks. *Journal of Purchasing and Supply Management*, 9 (2), 51–62.
- Kraljic, P. (1983). Purchasing Must Become Supply Management. *Harvard Business Review*, 61(5), 109–117.
- Royal Society. (1992). *Risk: Analysis, Perception and Management*. London: Royal Society.
- Williamson, O. E. (1979). *Transaction Cost Economics: The Governance of Contractual Relations*. New York: The Free Press.



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