Chapter 1
A Conceptual Framework for Risk and Vulnerability in Virtual Enterprise Networks

Jan Husdal
Molde Research Institute, Norway

ABSTRACT

Is managing risk in Virtual Enterprise Networks different from managing risk in supply chains? It is not unusual for firms in a supply chain to come together and act as a virtual enterprise network (VEN) and the supply chains of today’s globalized and outsourced business environment exhibit many VEN-like features. Looking at VEN risk management from the perspective of supply chain risk management, current ideas on VENs will serve as a base onto which ideas on supply chain risk will be transposed. Many concepts related to supply chain risk will be explored and related to their possible VEN counterparts: risk, vulnerability, robustness, flexibility, resilience and business continuity. Conceptual in its approach and drawing from other areas of research, this chapter introduces four distinct groups of VENS, namely Constrained, Directed, Limited and Free VEN, and concludes that VEN risk management can and should learn from supply chain risk management.

INTRODUCTION

Today’s unstable and highly competitive business environment has created a shift in how enterprises are established and managed. Past “traditional” enterprises are increasingly replaced by new “virtual” enterprises, forming temporary networks of independent companies or Virtual Enterprise Networks (VENs) that share skills, costs and access to each other’s market. While this kind of business formation is not without risks, managing risk in VENs is a rather underexplored and unstructured scientific area.

Driven by the advent of globally available skills and operational excellence (Sengupta, 2008) it is not unusual for firms in a supply chain to come together and act as a VEN, and it is from this perspective that the subject of risk management in a VEN will be explored. The purpose of the chapter is to approach the realm of VEN risk management from a
supply chain risk management (SCRM) perspective, where ideas from the current literature on supply chain risk, supply chain vulnerability and supply chain disruptions in traditional enterprises will be linked to some of the prevailing ideas of how to ideally structure and organize a VEN. Essentially, current ideas on VENs, along the lines of Thompson (2008a), will serve as a base onto which traditional ideas on supply chain risk will be transposed.

Thus, the idea of this chapter is to serve as a descriptive rather than prescriptive concept or framework for how a VEN is exposed to risk and furthermore to explore how a VEN can deal with potential risks, using SCRM practices applied to a VEN environment.

BACKGROUND

It has been more than 15 years since the shape of today’s virtual enterprise networks began to emerge when Snow, Miles, Coleman, & Henry (1992) identified 3 types of networks: 1) internal, 2) stable and 3) dynamic, the latter composed of “lead firms who identify new opportunities and then assemble a network of complementary firms that meet the market needs” (Child, Faulkner, & Tallman, 2005a). From this starting point, the definition of what constitutes a virtual enterprise network, in literature, varies considerably.

Virtual Enterprises: A Special Form of Cooperative Strategy

Traditional enterprises can enter into various forms of cooperation without necessarily establishing what is called a VEN. Child et al. (2005a) describe six reasons why firms seek to establish cooperative networks: 1) certainty – by developing relationships with mutual solidarity, 2) flexibility – by being able to quickly allocate a range of resources, 3) capacity – by “outsourcing” work to other network members, 4) speed – by being able to quickly respond to a wide range of business opportunities, 5) skills and competence – by gaining access to resources other than one’s own, and 6) intelligence – by sharing market information.

Placing cooperative networks on a scale, going from independent to integrated, Child et al., describe five degrees of networks: 1) Equal-Partner Network, 2) Unilateral Agreements, 3) Dominated Network, 4) Virtual Corporation, and 5) Strategic Alliance. The virtual corporation is described as “a loosely coupled enterprise in which the parts are held together through the medium of sophisticated information technology packages”. Interestingly, they note that the virtual corporation may be “a transitional stage of company development on the path to complete hierarchy”, a statement that is somewhat contradictory to Nolan & Croson (1995), who foresaw networks emerging as the organizational forms of the future, replacing and transforming the traditional pyramid-shaped hierarchical organization.

The Concept of Virtual Enterprises in the Past

In the late 1980s the term ‘virtual corporation’ began to appear for the first time. In the beginning, “virtual” referred to invisible or virtual links between companies in the form of information and communication technology, aka ICT or computers. Virtual corporations were technology-driven corporations, using and sharing the same information systems:

The virtual corporation is a temporary network of independent companies – suppliers, customers, even erstwhile rivals – linked by information technology to share skills, costs, and access to one another’s markets (Byrne, 1993).

Davidow and Malone (1993) describe virtual corporations as being able to apprehend customer needs and specifications and create new products instantaneously or on-the-fly, thus constantly re-