

Abstract

A NOVEL FRAMEWORK FOR MITIGATING e-RISK THROUGH INSURANCE

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“New” economy organizations are solely reliant on the Internet for their top lines. The “old” economy organizations use Internet as an effective distribution channel, to reduce costs and enhance bottom lines. The critical success factors for these organizations are secure, robust, scalable communication channels and creation of a sense of trust in the minds of their users (customers and suppliers). But, these communication channels are prone to threats like snooping and sniffing and other malicious attacks.

E-risk is defined as a probability of a malicious electronic event that cause disruption of business and monetary loss. We define e-risk as a collection of four risks namely (i) Conventional risk: hardware failure, software failure and data loss, (ii) Internet related risks: Virus or worm attack, Denial of service, graffiti, identity theft, cyber extortion, phishing.(iii) risk of wireless media : PDAs, mobile phones etc are used to hack organizational databases and (iv) legal risks: non compliance to legal standards like BS7799, COBIT etc. Hackers and disgruntled employees, exploit both the security and application level vulnerabilities to break into organizational databases and gather confidential customer information (like pin numbers of credit cards from a bank). E-risk disasters have direct impact on the bottom line of the organization, in terms of loss of opportunity cost. The organization’s brand equity and market capitalization too are adversely impacted.

To secure these online transactions, and to

We propose an e-vulnerability metric based on two parameters namely, (i) technological issues and (ii) organizational issues.

for an insurance company. An insurance company providing e-insurance would be distinctly differentiated vis-à-vis its competitors.

We have developed a framework of e-risk sharing amongst e-risk insurance companies. This thesis focuses on developing a business model for the insurance companies, by which they can mitigate the e-risk that they accept and does not go ruin. The study proposes that multiple insurance companies share the e-risk amongst themselves. This is based on the premise that sharing of e-risk amongst multiple tiers reduces the variance of e-risk. The framework proposes a framework, to minimize loss of data in case an eventuality strikes a member in the chain. It is proposed that a canonical form of the data would be stored at each tier, with the help of Internet Data Center's (IDC). So, as a contingency measure, some amount of data could be retrieved and handed over to the customer, in addition to indemnification for the loss, in monetary terms. We have developed two models, to find out the optimal number of layers into which the e-risk should be split. The first is a variance reduction model and the second is a return on capital technique. In the former model the variance of the e-risk is sliced till there is sufficient reduction in variance. In the latter model, the mean e-risk is sliced till the net cash flow exceeds the return of capital. Net cash flow is arrived at by computing the amount of premium received for retaining e-risk less the costs namely (i) investment in technology to retain the e-risk,(ii) premium to be paid for passing the e-risk and (iii) the cost of indemnifying the loss in case of a claim. The revenue of an e-risk insurance company depends on the amount of e-risk it retains. The study simulated a number of market scenarios (varying the risk transferred fraction, the premium overloading factor, the frequency of occurrence of security breaches).

We also propose two strategies for funded self e-risk insurance. In the exchange traded strategy we propose that the online organization, i

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