SPECIAL ISSUE ON INTERNET, E-COMMERCE, AND INNOVATION

Guest Editorial: Innovation, the Internet and E-commerce Introductory Notes for the Special Issue

RESEARCH ARTICLES

A Model of the Internet as Creative Destroyer

Innovation and Education in the Digital Age: Reconciling the Roles of Pedagogy, Technology and the Business of Learning

A Multi-Level Analysis of Factors Influencing the Adoption of Internet Banking

Differentiating Between Adopter Categories in the Uses and Gratifications for Internet Services

Examining Pre-Acceptance Interest in Online Innovations: An Exploratory Study of E-Service Personalization in the Public Sector

Distribution Strategies for Online Retailers

Supply-Side Hurdles in Internet B2C E-Commerce: An Empirical Investigation

The Internet as an Enabler for Dynamic Pricing of Goods

Facing the Challenges of Service Automation: An Enabler for E-Commerce and Productivity Gain in Traditional Services

Organizational Learning in Open-Source Software Projects: An Analysis of Debugging Data

BOOK REVIEWS

Proactive Risk Management by P. G. Smith and G. M. Merritt

Beyond the Dot.Com's, The Economic Promise of the Internet by R. E. Litan and A. M. Rivlin

ANNOUNCEMENTS

Forthcoming Engineering Management Conferences

READERSHIP SURVEY

2004 MEMBERSHIP APPLICATION FORM

Papers to be Published in Future Issues of IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT

2004 INDEX

Follows page 502
Book Review

Proactive Risk Management P. G. Smith and G. M. Merritt ( Shelton, CT: Productivity Press, 2002) Reviewed by A. Anandarajan

Risk management is an essential element of modern business administration. All business firms face potential for loss from lawsuits and accidents. Risk management is the art and science of anticipating potential losses and developing a plan to survive them. In modern text books, this topic has been examined from different perspectives: from a legal perspective, discussing the legal ramifications of different types of risks; from a statistical view point, generating mathematical models to identify probabilities of risk; from a philosophical viewpoint, providing elegant theories; and from a practitioners' viewpoint point. The last mentioned is a relative rarity. Most modern textbooks approach this topic from legal perspective, statistical perspective, or a combination of both. The problem with the majority of these textbooks is that they tend to get esoteric, especially those that approach this topic from a mathematical perspective.

Proactive Risk Management, by Smith and Merritt, is a refreshing rarity in that the authors keep intricate discussion of statistical models to a bare minimum. Thus, one does not need to have an in-depth comprehension of, for example, Bayesian theory, to understand the concepts discussed in this book. The authors look particularly at one aspect of risk management, namely, risks associated with product development. The purpose of the book is to identify potential problems that can happen during the product development process. The authors lead us through a risk management process using the premise that anticipation of problems reduces the element of surprise and can help reduce losses. The risk management process discussed in this book is not new or novel—the approach has been discussed in many textbooks. Virtually every textbook on risk management discusses the basic model used in this book. Further, modern textbooks, especially those used in academia, compete to incorporate the most recent research or discuss the latest technology and the impact of technology on risk management. These issues are significantly lacking in this book. The only criticism that can be made against this book is that there is no discussion of the latest research in the area of product development management or how the latest technological innovations create new risks or mitigate the threat of other forms of risk.

This book approaches the topic of risk management for product development with a refreshing "hands on" approach. The authors discuss many issues from their own personal experience. The entire book is written in a "user-friendly" style that makes for very easy reading. They develop a general model of risk, that, in my opinion, can be adopted/adapted for any type of product development project. Further, a lot of academic text books spend inordinate amounts of pages discussing symptoms of risk. The authors spend the time more usefully discussing the root causes (which they refer to as "drivers") of risk. Another facet is that they adopt a "cross functional" approach discussing how people with different skills can work together. The authors discuss a multiplicity of tools and strategies that can be used to implement an effective project risk management program. A feature of this book that makes it stand out relative to other books in this field is the focus on organizational and cultural impediments that can act as an impediment to a risk management program. I have not seen this issue discussed elsewhere.

In conclusion, the authors present a model that is easy to understand. They provide a set of simple steps without unnecessary verbosity. They adopt a "holistic" view identifying organizational and cultural issues that have to be understood to implement a project successfully. The authors bring their vast experience to this book with numerous examples of "how to" and discussion of a wider variety of techniques than can be found in other books in this field. To illustrate my point, I particularly liked the design structure matrix (DSM) as a tool for managing "incomplete" information used in Chapter 9. From a practical standpoint, managers do work with insufficient information on many occasions and this itself is another form of risk. Most text books deal with this problem discussing probability theory and "expected values" (also discussed in this book). While academically acceptable, they do not have the practical merit relative to the DSM method suggested here. Many examples like the DSM model which, is not found elsewhere, make this book enjoyable to read. Overall, the authors provide straightforward and practical suggestions to managers for managing risks and implementing strategies in a real world situation.


This important little book (it is only 119 pages) should be read by anyone interested in brainstorming for themselves some of the longer-term economic impacts and policy implications of the Internet. Even if one disagrees with some of the views and conclusions presented, one is forced to think through the statements and one's reasons for questioning them. Further, the book is a timely reminder that just because a lot of Internet stocks turned out to be full of hot air, the utility and productivity improvements representing the original reasons for the hype have often proved real and are continuing. Internet sales are growing and business-to-consumer (B2C) sales for Christmas 2002 were substantially larger than the year before despite a poor economy and stock market. Therefore, just as the impact of the railroad and the telegraph in the nineteenth century in another "watershed" event opened the country and led to dramatic economic growth and expansion of markets independent of various speculative booms in their stocks, so too the Internet is and will have a continuing impact on the economy, business, and markets in the years ahead.

Based on the inputs and opinions gathered from various experts, Beyond the Dot.coms, The Economic Promise of the Internet tries to evaluate and highlight some of these considerations.

In pursuing its goals, the "book draws on the work of the Brookings Task Force on the Internet, which pulled together eight teams of experts from leading business schools and universities to study the possible impact of the Internet on major sectors of the U.S. economy over the next five years." One over-riding conclusion is that its impact will be greater on so-called "old" economy sectors and businesses than on the "New Economy," even allowing for the fact that so many new economy companies have disappeared. From this perspective, old-line retailers such
as Barnes & Noble have been, and may continue to be, more affected than its rival Amazon.com.

However, the book notes that its affect on the "old" economy really goes way beyond just visible effects on activities such as e-retailing or even business-to-business (B2B) sales because it has increased everyone's connectedness and productivity. Community groups can keep records and communicate more efficiently, individuals can more easily and cheaply make their travel plans, etc. Thus, personal productivity has and continues to increase dramatically on and off the job. Again, the railroad analogy is useful in that trips that had taken weeks subsequently took days or even hours, and one could read and do work at the same time. This kind of hidden productivity growth can have large effects on both the quality of life and economic productivity. However, it is the latter the Brookings study tries to evaluate and measure. Their conclusion is that Internet use should add about 0.25%–0.5% to U.S. productivity growth by making the old economy work more efficiently.

This conclusion is then assessed in more detail in an essentially cost-side analysis that sees traditional organizations doing their normal tasks such as "ordering, billing, and getting information to employees, suppliers, and customers" quicker and at lower cost. Further, the authors argue the major reason use of the Internet will continue to grow and expand despite the collapse of the dot.coms is because traditional firms will have to invest in Internet related hardware and systems to meet the Internet based cost reductions achieved by their rivals. That is, cost competition will force firms to invest, and this will force expanded Internet capacity and use. While the argument recognizes this competitive based result means firms will never recognize a return on their Internet investments, the alternative is going out of business by not meeting cost competition. So the investments will be made, productivity in the traditional sectors will rise, and the economy and consumers will reap the rewards.

Thus, just as many railroads could not capture the externalities they contributed to economic growth, firms are not expected to capture the benefits of their Internet investments' contribution to U.S. productivity improvements. This is certainly a sobering and perhaps realistic view of likely developments and would continue the long-term trend several economists have noted in business' difficulty in realizing a positive return on investments in IT hardware and systems. Indeed, the authors see the Internet as increasing global competition and compressing margins along the supply chain from which firms will only indirectly benefit. In addition, some businesses such as car dealers may be hurt as firms sell more directly to consumers who order their customized vehicles on-line while telecommuting more at home.

It is in this relatively negative underlying business perspective on the positive economic contribution of the Internet that some of the study's assumptions and conclusions may prove faulty. First, many traditional firms that are leveraging the Internet to their advantage see it as just one part of an information technology (IT)-based infrastructure linking them worldwide with suppliers, customers, information sources, employees, and governments. Thus, strategically it does not dominate their thinking. Rather, their strategy argues that today access must be ubiquitous across all channels including mail, mobile phones, in-store kiosks, in-car communication systems, intranets, and PCs. The Internet is just a part of this. Furthermore, if these can be linked via proprietary systems that are closely tied to one's organization, a firm can create value as well as barriers to emulation that translate into a real positive competitive advantage. This would be analogous in the railroad case to development of unit trains and piggy back logistics coupled with customer specific tracking systems that have enabled certain Western railroads to prosper even as Amtrak and Conrail have suffered. Such a positive outcome implies that the potential contribution of the Internet on a stand alone basis as argued in the book may be overstated while as part of a contribution of IT it may be understated since revenue generation would pull more firms into making IT investments, including those that were Internet related. This situation would actually increase competitive pressures on rivals to try to respond while making an additional positive contribution to productivity increases.

Furthermore, just as Sears Roebuck was able to leverage the railroad into a very successful catalog business that Amazon and others eventually copied online, such IT-based developments are opening new and previously unexplored areas of e- and m-commerce. Toyota, for example, sees the development of a $2 trillion global telematics market surrounding the intersection of new in-car communications and navigation systems, informative databases related to travelers, and multimedia kiosks located in convenience stores and family restaurants where one can buy tickets, make hotel reservations, or download music, games, and DVDs. Only parts of this would be Internet based. Thus, there is no substitute for vision and strategy in using a combination of proprietary IT, organization, and the Internet to develop new businesses and improve old ones in ways that create competitive barriers and are thus difficult to emulate. In addition, as the book explains, this will have to be done while negotiating a thicket of new concerns over issues involving privacy, sales taxes, cyber-crime, terrorism, Internet security, and intellectual property rights. This will be the challenge to organizations, managers, and policymakers that do not want to just ride along as Moore's Law doubles the speed and capacity of IT and the Internet around every two years, implying something a 1000 times larger and faster within 20 years. Definitely worth the reading, and it can be ordered online.