

Preface

INTRODUCTION

Sustainable market growth of an organisation lies in its capability to create new ideas that have a market value. Innovation is defined as “the successful exploitation of new ideas” (Amabile, Conti, Coon, Lazenby, & Herron, 1996; DTI, 2003). Innovation, by definition, means “something that is new or significantly improved, done by enterprise to create added value either directly for the enterprise or indirectly for its customers”(BCA, 1993). For organisations, innovation is essential for long-term stability and sustainable performance (Cottam, Ensor, & Band, 2001). For consumers, innovation means higher quality and better value for goods and services. Tony Blair, the UK former Prime Minister, emphasises that innovation “is absolutely essential to safeguard and deliver high-quality jobs, successful business, better products and services for our consumers and new, more environmentally friendly processes” (DTI, 2003). The common dimension of innovation diffusion is the source of the newness in organization, market, technology, product and the process (Kim & Galliers, 2004).

Adopting ideas innovated by competitors may stimulate business improvement but will seldom result in anything other than one step toward closing the gap with competitors; innovation is a uniquely human activity and it is difficult to translate the tacit knowledge associated with the implementation of innovative ideas, system, technology or practice. The tacit knowledge of people creating and implementing the original innovation cannot be copied. Even copying successfully ‘innovation’ requires by itself innovation, that is, requires creative ideas. The term ‘innovation’ is associated with the term ‘creativity’. Creativity implies coming up with, or bringing ideas to life, while innovation means successful implementation of the creative idea. Creativity can be created by individuals and forms a necessary condition for innovation. Innovation, on the other hand, occurs in organisational context and forms a managerial process that requires “specific tools, rules and discipline” (Davila, Epstein, & Shelton, 2006).

The process in which innovation is communicated through social system channels over time is referred to as diffusion (Rogers, 1995). Rogers (1995) develops the diffusion of innovation theory (DOI) and specifies five variables that determine the rate of innovation adoption. These variables are relative advantage, compatibility, complexity, trialability and observability (pp. 15-16).

Research on innovation has been concerned with a wide range of areas related to products and services among them innovation in organizations (Damanpour, 1992), innovation in marketing (Atuahene-Gima, 1996), technological innovation diffusion (Bradford & Florin, 2003; Rogers, 1995), process innovation (Davenport, 1993), innovation for information systems (Allen, 2000; Kim & Galliers, 2004) and ecology (Rennings, 2000). The Organisation for Economic Co-Operation and Development (OECD) identifies five type of innovation within business and enterprise (OECD, 1997):

1. New product development or qualitative change to an existing product –good or service);
2. Process innovation
3. Opening of a new market
4. Development of new sources of supply, (for raw material or other input).
5. Creative changes in industrial organisation.

Recently research on innovation has widened into two interrelated directions:

- Consideration of social networks (Taatala, Suomala, Siltala, & Keskinen, 2006) and social responsibility (MacManus 2008) on innovation;
- Developing pathways that take advantages of both internal and external (other firms) innovation. This development in innovation is referred to as ‘open innovation’ (Chesbrough, Vanhaverbeke, & West, 2006).

The focus of the book is on managing innovation through bridging gaps created from theories, relative advantages or competitiveness, social differences, and innovation capability and performance. Bridging gaps is recognised by academics and practitioners as a vital matter to develop and implement innovation. There is also a strong tradition among the researchers on innovation of using empirical studies in the form of survey and multiple cases studies to determine factors, test hypotheses and propositions affecting or dealing with gaps. This feature makes the book a valuable resource for academic professionals, practitioners as well as postgraduate students dealing with innovation processes.

THE STRUCTURE OF THE BOOK

This book is comprised of eighteen chapters organised into four sections; theory and practice, capability and performance, social aspects of innovation, and innovation systems.

Section 1: Theory and Practice

This section features six chapters demonstrating attempts for bridging gaps between theories and practices. In the first chapter of this section, Professor Bamberly from Charles Stuart University (Australia) investigates the concept of innovation in cumulative causation theory and highlights the links of characteristics of the theory and their influences on innovation processes. The range of cases provided in this chapter paths the way to bridging the gap between the theory and practices on innovation. These characteristics and influences are then used as a basis for reporting empirical research into the nature of innovation in manufacturing and processing in an Australian rural region, and the usefulness of the theory for explanatory purposes is evaluated.

Technology adoption is based on principles of Diffusion of Innovation (DOI) theory. In the second chapter, “Lowering the center of gravity of enterprise IT”, Hutchins, Goodman and Rooney from IBM Corporation provide a successful practical path to technology adoption. They emphasise the importance of dealing with the technology and innovation as management program. IBM’s Technology Adoption Program (TAP) describes one such innovation management discipline demonstrating through three brief case studies how to mitigate the common plagues of development projects. While the issues with

technology and innovation management are obviously wide and varied, this chapter focuses on the need for a formal initiative to manage innovation. Similarly, fully understanding the workings of a program such as TAP is of considerable scope. The benefit to the reader is the focus on driving the decision making around technology to the users – the community – as a core section of making decisions.

The third chapter of the ‘Theory and Practice’ section is authored by Ortt from Deft University of Technology, The Netherlands. Chapter 3 of the book underlines the managerial relevance of the pre-diffusion phases for high-tech products. These phases last from the first demonstration of a technological principle to the start of the large scale production and diffusion of products based on that principle. Based on fifty-three cases of high-tech products, invented between 1837 and 1998, the study shows that the pre-diffusion phase’s length varies considerably per case. No proof for the shortening of these phases over time is found. The study indicates that the resources devoted to research and development in different fields of expertise may have increased but the length of individual technological trajectories has not shortened accordingly.

Based on the study of 160 Chinese organisations, Wei Sun and Ruth Alas construct a theoretical framework to explore the links between the types of innovation, the types of organizational change and levels of learning. On the basis of survey results, the authors of Chapter 4 find out there are close connections between the three aspects: innovation type, change type and learning type. The study finds that the highest level of innovation is accompanied by deepest change, but the lowest level of innovation may not be necessarily accompanied by lower level change, i.e. deepest scope of change may take place even if the lowest level of innovation happens in a Chinese organization.

In an attempt to answer the question; “what makes companies to be more productive and profitable?” Pérez-Luño, Valle-Cabrera and Wiklund empirically test the impact of market and entrepreneurial orientations on the innovation decision. They conducted a survey comprising 304 companies. Results of Chapter 5 show that proactivity is the most important determinant in the decision of whether to innovate or imitate. The study shows that a company’s performance is not conditioned by the decision of innovating or imitating, but is rather determined by the company’s proactivity and focus on customers.

Involvement of users in new product development is needed more than ever due to the technological and the social progression in recent years. Usage of ICT tools is one approach forwarded in literature discussing user-involvement. Chapter 6 entitled, “Usage of ICT tools in new development: creating user involvement” by Jespersen and Buck explores the antecedents of ICT usage in new product development (NPD). The study employs case study methodology and utilizes five groups of factors: innovative climate, strategic emphasis on ICT tools, ICT champions, competencies and performance expectations. The case findings demonstrate that the most significant antecedents for sustained user-involvement in NPD with ICT tools are strategic emphasis, competencies and the type of ICT champion.

Section 2: Innovation Capability and Performance

This section is comprised of four chapters dealing with the innovation performance and innovation capabilities at the national and organisational level. The first chapter of the second section (Chapter 7) deals with the factors and dimensions of national innovation capacity. Natário, Couto, Tiago and Braga investigate the European Innovation Scoreboard database and use clusters analysis to verify how different countries are positioned and to determine which factors distinguish the country’s innovative capacity. The results point to the existence of four groups of countries. The factors identified point to aspects related to the institutional efficiency, the societies’ cultural values associated with the level of

hierarchy or “power distance” and with aspects such as the level of population with tertiary education and the percentages of expenses with research and development applied by the companies.

In the second chapter, Omar and Lewrick challenge the context of entrepreneurship competences and management capabilities needed for innovation. The authors build their arguments in step with actual practice, analyzing data from over 200 innovative companies which have been created under the formal requirements of a regional business plan competition during the last 10 years. This study explores the crucial capabilities to start an innovative business and discuss the capabilities have to be developed to sustain innovation and business growth.

Large firms are generally good at managing incremental innovations, yet they often lack the capabilities that are conducive to developing and deploying radical innovations. In Chapter 9, Shah, Ortt and Sholten deal with the innovation capability of large firms and explain the obstacles that firms face with respect to developing radical innovations. The authors collect data among three large enterprises; Shell, Nokia and IBM, and identify the practices these firms have developed and established a radical innovation mechanism that allows them to circumvent the obstacles for tapping into radical innovation.

Chapter 10 authored by Cedergren, Wall and Norström presents a framework for a conceptual evaluation of the performance of industrial product innovation activities by considering three categories of activities: Planning, Implementation, and Sales and Delivery. In this chapter the results of research involving seven large companies in Sweden, with the objective of improving the understanding of what is required to be successful when developing complex industrial products, are presented. Key success factors are discussed.

Section 3: Social Aspects of Innovation

This section includes five chapters dealing with various social aspects of innovation. The first chapter of this section (Chapter 11) investigates the impact of labour relations on a firm’s innovative output. Zhou, Dekker and Kleinknecht from Erasmus University of Rotterdam, The Netherlands find that active practices of human resource management such as job rotation, performance pay, high qualification levels of personnel, as well as making use of employees with long-term temporary contracts contribute positively to innovative output. Furthermore, firms that retain high levels of highly qualified personnel are more likely to introduce products that are new to the market.

Very little research has investigated the role of intellectual (IC) capital in innovation processes in social enterprises. The central argument of Chapter 12 is that IC assists social enterprises to harness knowledge that leads to innovation for the pursuit of social and commercial activities. This chapter is authored by Eric Kong from the University of Southern Queensland (Australia). The chapter contributes to the literature by theoretically arguing that intellectual capital can be utilized in innovation processes in social enterprises. The study proposes an IC conceptual framework, which helps social entrepreneurs to visualize IC and its components in their organizations. The framework’s implications for the development of effective innovation-based strategies in social enterprises are also discussed.

Chapter 13 “Factors predicting the innovation climate” by Übius and Alas from Estonian Business School, Estonia investigates how such factors as corporate social responsibility and individual and organizational level factors predict the innovation climate. The study analyses the results of large-scale survey received from 4632 respondents from Estonian, Chinese, Japanese, Russian and Slovakian enterprises. The results of the empirical study shows that both facets of corporate social responsibility - the firm performance concerning social issues and the firm respects the interests of agents, individual

and organizational level factors predict the innovation climate, but it differs according to different countries. The study develops models to explain how corporate social responsibility, individual and organizational level factors predict the innovation climate in Estonian, Chinese, Japanese, Russian and Slovakian electric-electronic machine, retail store and machine-building enterprises.

Chapter 14 entitled, “Advancing the potential of diversity for innovation” by Nancy Erbe, California State University (USA) introduces a collaborative conflict resolution model with a focus on cultural diversity and innovation. The chapter presents the optimal criteria for a multicultural process identified in evaluative research conducted in four parts of the world: the Balkans, Cameroon, Nepal and Ukraine. It aims to demonstrate the correlations between collaborative conflict process at its best and innovation within diverse teams and organizations.

The final chapter of this section (Chapter 15), “Managing corporate social responsibility as an innovation in China” by Maria Lam, Malone University (USA) argues that many foreign multinational enterprises focus on legal compliance and charity in their corporate social responsibility (CSR) programs in China. This chapter describes a few innovative CSR initiatives being utilized within an industrial association and within partnerships between local non-government organizations. It also explores institutional incentives for managing the process by using the social movement theory. The chapter concludes that the key barriers for the strategic approach of CSR are the apathetic attitude of many executives toward CSR and the shortcomings of the institutional framework in China.

Section 4: Innovation Systems

This section features three chapters dealing with the application of the innovation systems. The first chapter of this section (Chapter 16), “Study of SMS innovation in two Queensland industries” authored by David Thorpe and Steven Goh two different types of industries; a small micro manufacturing firm and a domestic building construction firm. This chapter studies the output of implementing innovation systems in these both diverse industries and finds that there are common factors that aided and inhibited innovation in each industry.

In Chapter 17, Dhodapkar, Gogoi and Medhi study the innovation system linkages in Indian hydrocarbon sector. This chapter elaborates the concept of innovation system, that is, the formal or informal linkages between the policy makers, industry, academic and research institutions, etc. and its relevance for organizational effectiveness. Using creative and visual thinking tools, authors explore the reasons for the fragmentation of innovation system of Oil India Limited (OIL), a national oil company operating mainly in the northeast India. This fragmentation is evident from several issues such as stagnating oil production, technological obsolescence, continued impact of natural calamities and conflicts in the region and prolonged dependence on central government funding.

The final chapter of this book “Nanotechnology innovation systems – A regional comparison” is authored by Nazrul Islam from Cardiff University Innovative Manufacturing Research Centre (UK). The aim of this chapter (Chapter 18) is to provide a systematic comparison of nanotechnology innovation systems (NanoSI) at the national level in Europe and Japan. Having carried out a detailed analysis on the primary data, relevant attributes of nanotechnology innovation infrastructure have been identified and similarities and disparities between European and Japanese NanoSI have been explored. The chapter addresses strengths and weaknesses, major drivers and barriers to a detailed understanding and smooth functioning of NanoSI.

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REFERENCES

- Allen, J. P. (2000). Information systems as technological innovation. *Information Technology & People*, 13(3), 210-221.
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 1154-1184.
- Atuahene-Gima, K. (1996). Market orientation and innovation. *Journal of Business Research*, 35(2), 93-103.
- BCA. (1993). *Managing the Innovation Enterprise*. Melbourne: Business Council of Australia.
- Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems*, 4(3), 205-225.
- Chesbrough, H. W., Vanhaverbeke, W., & West, J. (2006). *Open innovation: researching a new paradigm*. New York: Oxford University Press.
- Cottam, A., Ensor, J., & Band, C. (2001). A benchmark study of strategic commitment to innovation. *European Journal of Innovation Management*, 4(2), 88-94.
- Damanpour, F. (1992). Organizational size and innovation. *Organization studies*, 13(3), 375.
- Davenport, T. H. (1993). *Process innovation: reengineering work through information technology*. Boston, MA: Harvard Business School Pr.
- Davila, T., Epstein, M., & Shelton, R. (2006). Design for Innovation. *Leadership Excellence*, 23(2), 15.
- DTI. (2003). *Competing in the Global Economy: the Innovation Challenge*. London: Department of Trade and Industry.
- Kim, C., & Galliers, R. D. (2004). Toward a diffusion model for Internet systems. *Internet Research*, 14(2), 155-166.
- OECD. (1997). *The Oslo Manual: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data*. Paris: Organisation for Economic Co-Operation and Development.
- Rennings, K. (2000). Redefining innovation—eco-innovation research and the contribution from ecological economics. *Ecological Economics*, 32(2), 319-332.

Rogers, E. M. (1995). *Diffusion of innovation*. New York: The Free Press.

Taatala, V. P., Suomala, J., Siltala, R., & Keskinen, S. (2006). Framework to study the social innovation networks. *European Journal of Innovation Management*, 9(3), 312.