

Preface

It has become a widely recognized fact that entrepreneurs and information technology (IT) have become the backbone of the world economy. The increasing penetration of IT in society and in most of industries/businesses, and the joining forces of entrepreneurship, innovation, and IT in the knowledge-based economy re-enforce the need for a leading and authoritative forum to disseminate frontier research results about entrepreneurship, innovation, and IT from an international perspective. The primary purpose of this book is to present and explore current trends and changes in the nature, process, and practice of entrepreneurship and innovation in the development, implementation, and application of information technology.

THE CONCEPT OF ENTREPRENEURSHIP

There has been no consensus in defining entrepreneurship and innovation in the exiting literature (Zhao, 2006). Some studies have dealt with entrepreneurship and innovation by investigating the personality and psychology of entrepreneurs and innovators (Caird, 1988; Casson, 1982; Littunen, 2000). Others have talked of the nature of entrepreneurship and innovation in organizations (Goffin & Pfeiffer, 1999; Martin, 1994).

“Entrepreneurship, in its narrowest sense, involves capturing ideas, converting them into products and or services, and then building a venture to take the product to market” (Johnson, 2001, p. 138). A noticeable trend in the study of entrepreneurship in recent years has been away from the subject of small business *per se* toward the concept of entrepreneurship (Chell, 2001; Cornwall & Perlman, 1990). The book reflects this trend by emphasizing the concept of entrepreneurship itself, rather than the personality or psychology of small business entrepreneurs.

Entrepreneurship represents organizational behavior. The key elements of entrepreneurship include risk-taking, proactivity, and innovation (Miller, 1983). However, Slevin and Covin (1990, p. 43) have argued that the three elements are not sufficient to ensure organizational success. They maintained that “a successful firm not only engages in entrepreneurial managerial behavior, but also has the appropriate culture and organizational structure to support such behavior.” The book adopts a similar approach and treats entrepreneurship as organizational behavior that is related to change and innovation.

It should be noted that entrepreneurs are different from small business owners. Garland, Hoy, Boulton, and Garand (1984) and Steward, Watson, Garland, and Garland (1998) argued that small business owners were concerned primarily with securing an income to meet their immediate needs and that they did not usually engage in innovation, whereas entrepreneurs had higher achievement motivation and

risk-taking, and were inclined to innovation and change. This book presents a related perspective in arguing that entrepreneurship and innovation are closely related and complementary in the development, implementation and application of information technology.

THE CONCEPT OF INNOVATION

For more than half a century, research and development (R&D) has been closely associated with technological innovation (Miller & Morris, 1999). But invention is the narrowest definition of innovation. Drucker (1994) maintained that there are seven basic sources of opportunities to innovate. Only one of them is to do with inventing something new. Innovation is thus more than invention, and does not have to be technical. There are numerous examples of social and economic innovations (Drucker, 1994). Innovation is a proposed theory or design concept that synthesises extant knowledge and techniques to provide a theoretical basis for a new concept (Bright, 1969; Sundbo, 1998). Innovation thus has many facets and is multidimensional. The most prominent innovation dimensions can be expressed as dualisms—(1) radical vs. incremental; (2) product vs. process; and (3) administrative vs. technological (Cooper, 1998).

In this book, innovation is defined broadly to include new information technologies and products, new processes including business, managerial and production processes, new services (including new uses of IT and other established products, processes and services), new forms of organization, new markets, and the development of new skills and human capital.

INTEGRATION OF IT WITH ENTREPRENEURSHIP AND INNOVATION

Studies show that industries and businesses have varied considerably in terms of their IT performance. According to a McKinsey study, “after spending \$7.6 billion on IT between 1995 and 2000, the lodging industry experienced no increase in revenue and no increase in productivity” (cited in King, 2007, p. 2). On the contrary, some businesses and industries are making significant improvement in productivity through IT and achieving new revenue streams and competitive advantage (King, 2007). Although there are a number of factors contributing to the success and failure of IT investment and performance, entrepreneurship and innovation play a key role for driving the success. Increase in spending on IT does not warrant superior performance in productivity and profitability if there is a lack of entrepreneurial capacity to identify and seize market opportunities and a lack of innovative use of IT. An integration of entrepreneurship, innovation, and IT presents new opportunities and challenges to today’s managers in gaining competitive advantage in this digitalized and more dynamic world.

This book deals with the interactions and interfaces of entrepreneurship, innovation, and IT at both a macro level, which concerns the mega environmental drivers of entrepreneurship, innovation, and IT as well as a micro level, which concerns the contextual factors underpinning the practices of the three. The book in its entirety demonstrates that business successes are inextricably linked to a combination of entrepreneurship, innovation, and IT, and that the three are enablers and key drivers of business sustainability. The book provides readers with up-to-date, comprehensive and rigorous research-based chapters in the topical areas. The book will help entrepreneurs, managers and other practitioners formulate and implement effective strategies and business plans in the development, implementation and application of information technology. The book also provides an in-depth insight into critical issues in IT applications in a wide range of industries and in different geographical areas around the world. Furthermore,

as the book is based upon both empirical and theoretical research, it will be a rich and valuable resource for researchers and students in the study fields.

ORGANIZATION OF THE BOOK

The book containing XXIII chapters is grouped into six sections based upon the dominant themes of each chapter. **Section I**, consisting of three chapters, presents some of the most recent research into IT innovations. This section captures and raises some of the key issues in the development and application of IT innovations as shown below.

Chapter I introduces the concept of ambient intelligence (AmI), a new concept in the area of IT, from a system development perspective in the manufacturing environment. To create an AmI environment requires the use of a combination of technologies. The AmI environment can be enabled through the use of computers that are embedded into everyday objects and through the use of wireless communication. The interaction between these embedded devices and the human user is improving through advancements in the area of natural interaction.

Chapter II is focusing on interoperability and providing a concept in order to speed up common innovation of the products and services in open semantic infrastructure. This includes identification of solution boundaries and innovation partners. Operative challenge is how to decompose the requirements across the boundaries of different companies in different branches and in different role in the value and innovation network. There is also challenge on how to manage evolving technologies to satisfy customers' existing and future expectations.

Chapter III presents the design of a heritage tourism Web portal. Factor analysis is used to identify how the navigation tools are to be grouped. Correlation analysis additionally identifies methods of grouping the navigation functionalities to substantiate the decision. Statistical analysis lends support to the reliability of the data used in the study. Examples are given about how heritage portal navigation functionality can be developed as hierarchical layered portal pages. Additionally, the perceptual map shows the layout and proximity of the portal functionalities.

Section II pursues managerial innovation in the management of IT and IT companies. In today's business world, most organizations depend on IT for their day-to-day activities and the achievement of their future strategies. However, the track record of IT initiatives in many organizations is not strong, and many fail—particularly when measured against the outcomes they were intended to produce.

Chapter IV looks at the importance of good corporate governance of IT to the success of IT investment. It examines practices and frameworks for effective IT governance in industry and business. Utilizing a mixed research methodology of survey and interview, 20 board directors' and senior managers' perceptions of IT governance and management were sought and analyzed. The findings show there is a need and opportunity for improvement in IT governance and that in most organizations, Australian Standard AS8015-2005 provides a sound foundation for such improvement.

Chapter V develops a performance measurement framework for SMEs specifically in the IT industry based upon the system theory and business excellence model to fill a knowledge gap in the study field. This chapter identifies the challenges, features, and drivers of performance measurement (PM) in the SMEs in the IT industry and finds that a dynamic and flexible PM framework is more suitable to SMEs than a mechanized PM model.

Section III focuses on entrepreneurs and entrepreneurship in the development and growth of IT and e-business enterprises in different sectors. The challenges and crucial issues in the process of entrepreneurship are explored and discussed with a number of in-depth case studies and working examples.

Chapter IV introduces the role of Web sites and e-commerce in the development and growth of global higher education start-ups. It argues that the key results, evidence, and experience, from this empirical case study research, highlight clear and precise reasons for the development of Web sites and e-commerce by the global start-ups. There are important implications of the study for entrepreneurs, policy makers, practitioners, researchers, and educators for the specific field of e-commerce developments for global start-ups.

Chapter VII offers a theoretically grounded and deeper insight into the e-commerce innovation process in SMEs. This is achieved by proposing a motivation-ability based four-state developmental framework. Each of the four states is then described in terms of organizational readiness, organizational capability, e-commerce capability, e-commerce motivational factors, and commodity chain position. The utility of the framework is demonstrated through case studies of 14 small-scale enterprises located in the Indian state of Karnataka.

Chapter VIII focuses on the process of creating electronic customer value within the net economy as well as the success factors and development phases of electronic ventures. The constant and rapid development of Internet-related technologies in the accompanying net economy has inevitably had a significant influence on various possibilities for developing innovative online business concepts and realizing these by establishing entrepreneurial ventures. The term “e-entrepreneurship” respectively describes the act of founding new companies that generate revenue and profits independent from a physical value chain.

Chapter IX discusses the use of business strategies for pure Internet firms. It separates the strategic choices and directions used for idea generation, during start-up, and beyond business or brand establishment. Corroborating much of the literature, it argues that traditional notions of strategy might be inappropriate for some dotcom firms due to the high level of complexity, speed of change and competitiveness characteristic of the Internet environment. The chapter suggests alternative strategy models that might be useful in our understanding of Internet business creation and development.

Section IV tackles specific issues in inter and intra organizational partnerships involving IT innovation. E-supply chain networks, virtual teams, and entrepreneurial business partnerships are the foci of the discussion. Technology issues such as system integration and e-platforms as well as people issues such as trust, culture, and communication in the partnerships are investigated and explored.

Chapter X studies the importance of information flows in e-supply chains/networks, and the need for their standardization to facilitate integration, legality, security, and efficiency of operations. The chapter contributes to the field by recommending a three-stage framework: the development of standardised Internet technology platforms (e-platforms), integration requirements, and classification of information flows.

Chapter XI aims to enhance the effectiveness of virtual teams in the health care industry. A conceptual framework of the specific components required for virtual team effectiveness and a survey tool to examine a team's performance (based on virtual team member perception) with each of these components are presented. The proposed conceptual framework of virtual team effectiveness categorises the determinants influencing the effectiveness of virtual teams into four key frames of leadership, team components, organizational culture, and technology.

Chapter XII studies the dynamics of online business networks where large numbers of entrepreneurs sign up. It introduces and explores a new approach, Rhizomic Network Analysis (RNA) to move analysis of networks and community interaction beyond mere description of relationship structures towards enabling the differentiation of the type of knowledge dynamics emergent. An example of an entrepreneurial business network is used to illustrate this approach.

Chapter XIII develops and underlines the concept of continuous improvement teamworking approach in a major Australian banking organization. The study develops a model, which is a virtuous CTIO circle reflecting the concern (issue), task (action), interaction (involvement and connection), and outcome (result) phases. It illustrates the new evolving consultative, participative, and interactive virtuous teamworking approach. The adoption of a continuous improvement teamworking approach is assisting in better running of retail banking operational activities and in achieving better performance.

Chapter XIV presents the regional development of universities aiming to increase their external impact on their environment. The purpose is to show that the activities of regional development and quality assurance at universities are important means of promoting the development of IT in the region. Regional cooperation between a higher education institution and IT enterprises is illustrated with examples. Conclusions and recommendations are drawn based on the findings.

Chapter XV highlights the role of trust from an Islamic perspective in a leader-followers relationship as well as a leader-customers relationship. The swift sharing of sensitive information is a major source of competitive advantage in today's age and is not possible without trustworthy relationships of top management with external as well as internal customers (employees) of a business. Where traditional literature believes that long-term relationships result in trust development, Islam considers that trust development results in building and maintaining long-term relationships.

Section V discusses the use of IT for knowledge management (KM). Some KM tools and KM systems are explored and the advantages and issues in innovative adoption and implementation of KM technologies are identified and analyzed critically. This section also gives sufficient space to e-learning and e-learning technologies in developing entrepreneurship and entrepreneurs.

Chapter XVI addresses the application of IT for knowledge management (KM) needed for innovation in industry. An IT based KM system to support innovation process in extended enterprise (EE) environment (i.e., to support mastering of the innovation process) is presented. The main objective of the new AIM System is to provide the means of stimulating the creation of innovative ideas in general, and specifically on potential product/process improvements and on problem solving.

Chapter XVII discusses how the independent nature of entrepreneurs, combined with the enabling features of digital information technology, may lead to a situation where paper-based and campus-specific classroom education is at best uncomfortable and at worst almost meaningless. The purpose of the chapter is to define and capture the latest thinking in applied education and relate this to the mindset of the emerging generation of entrepreneurs.

Chapter XVIII aims to stimulate debate among practitioners on the use of information technology in the process of entrepreneurial learning. Learning activity, pedagogical shifts within the wider disciplines of entrepreneurship education and the spin-off effects for entrepreneur training programs are all considered. The application of information technology through entrepreneurship e-learning packages is shown to have magnified the entrepreneurship potential in wider society.

Section VI examines the fundamental issues and complex process of technology innovation, which goes beyond information technology innovation. How to prepare for and deal with the dynamics of technology innovation as a whole is a main theme of the section. New product development and innovation

processes, which lead to technological obsolescence and fundamental change process, are examined in-depth. Working models, instruments and case studies are provided to illustrate the theoretical concepts presented and/or implement them in the real world contexts.

Chapter XIX asserts that process models are an excellent platform for a continuous stream of innovations. Such models can illuminate opportunities for new products and services and for new ways of distributing products and services. These dynamic models make it possible to coordinate the efforts of multiple business partners in order to better serve customers with quality, speed, and responsiveness to their needs. There is increasing evidence that businesses using these models to discover opportunities have achieved a sustainable advantage over their competitors.

Chapter XX introduces a new approach for performance measurement in product development and innovation processes. The new approach aims at the integration of concrete project data with information about the product by using semantic Web technologies. The chapter shows that there is an emerging gap between productivity increase and the complexity of product development processes.

Chapter XXI offers an approach, building on the authors' work along psychological lines with tacit knowledge measurement in the IT domain that seeks to capture responses to real scenarios experienced by recognized innovators and entrepreneurs. These scenarios and responses are used to evaluate the degree to which the respondent can be considered an innovator and to suggest what areas of personal or professional development may be needed.

Chapter XXII develops a set of seven dimensions, which may be applied to each sovereign nation as a guide to allow for systematic consideration and comparison of opportunities and challenges across borders. Under the assumption that innovation itself requires a unique set of skills or opportunistic settings, the chapter then explores each dimension's applicability to situations particularly associated with innovation in technology.

Chapter XXIII, the last chapter of the book, uses a case of lead-bearing solders to illustrate the far-reaching consequences of the forced phase-out of technologies, which have been used since the beginning of industrial electronics production. Lead bearing solders are one example of many technologies, which are candidates to become controversial. Increased awareness of side-effects, globalization and intensified use of single technologies indicate that this management task will gain momentum in the electronics industry and others.

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