

Book Review

Managing Convergence in Innovation: The new paradigm of technological innovation by Kong-rae Lee, Routledge, 2017, 149 pp.

“Managing convergence in innovation: The new paradigm of technological innovation” is an edited book by Kong-rae Lee and consists of nine chapters. It has three parts: Part I: How firms learn and diffuse; Part II: How to navigate convergence innovation and; Part III: Convergence innovation in Asian countries and industries.

The chapters offer interesting and insightful perspectives of convergence innovation which has increasingly gained research and managerial attention in recent years. This phenomenon can be understood as an evolutionary process of technological change giving rise to new applications and transformations of businesses, business models, products and industries. The chapters reflect a plurality of perspectives and approaches of the concept of convergence, the extent and impact of convergence innovation or more commonly referred to as technology fusion and on organisations providing a number of examples in Asian industries and countries with a focus on East and Southeast Asia. The book begins with an introduction of convergence innovation and the importance of managing the ever-changing processes of modern convergence innovation as the main driver of the so-called Fourth Industrial Revolution. As pointed out by Kong-rae Lee, the fourth industrial revolution is characterised by a convergence of technologies, creating new categories of product such as smart cars, drones, nano, bio and new generations of smarter phones.

It is well recognised that one important element of the convergence process which is crucial in the successful management of convergence innovation is learning and managing the learning processes. How individuals and firms learn and diffuse knowledge is discussed in Part I which consists of Chapter 2 and Chapter 3. Based on the premise that the innovative process can be best formulated as a learning process by society, Chapter 2 describes the changes in modes of technology from learning-by-doing to learning-by-using, learning-by-integration and learning-by-porting. Learning-by-doing takes place at the manufacturing stage after the product has been designed, which suggests that learning consists of developing and increasing skills in production. The authors posit that learning-by-doing becomes a subtle process when it involves industries characterised by a high degree of complexity. They argue that practices such as close collaboration between manufacturers and suppliers, product integrity, and management style based on consensus building, which are uniquely Japanese, can be better explained

by learning-by-using rather than learning-by-doing. The authors provide an excellent example of learning-by-using experience of the Nippon Steel Corporation, Japan. Going beyond learning-by-using, the authors elaborate on learning-by-integration as experienced by Korean industries, characterized by a heavy reliance on imports of technologically sophisticated capital goods. Korean industries procure goods for production from all over the world and integrate them into productive capacities. The authors then move on to describe a new mode of learning in architecture called learning-by-porting citing Fanuc, a company in Japan, as a successful case of the adoption of learning-by-porting. Chapter 3 focuses on innovation and networks which includes discussion on network paradigm, cognitive networks, individual social/information networks, stimulating individual and organisational innovation, and various network models of diffusion. The author presents interesting examples including automobile neural network, spatial model of soft drinks and theoretical model of tobacco control.

Part II which consists of Chapter 4 and Chapter 5 is on how to navigate convergence innovation. Chapter 4 concentrates on convergence innovation in the management of large firms with reference to the successful innovation convergence of Samsung Electronics. The success story of Samsung Electronics highlights four crucial processes, namely defreezing, organising, implementing and freezing. While the discussion in Chapter 4 focuses on specific firms in Korea, Chapter 5 discusses convergence and diversity in Korea as a country which has succeeded in moving from catching up with the levels of productivity and competitiveness of countries in Europe and North America to forging ahead as one of the most advanced countries. The author emphasises the importance of internationalisation which has created opportunities for extending and deepening Korea's existing capabilities in new markets. The two chapters also include a discussion on the issues and challenges faced in managing the convergence processes.

The third part of the book presents conversion innovation in Asian countries and industries. Chapter 6 compares convergence innovation with respect to industry type and country differences involving Korea, China, Japan and Taiwan. Industry differences discussed include intra-industry differences and inter-industry differences while country differences in convergence innovation are analysed in terms of cross-country comparison of patenting in the United States as well as cross-country comparison of inter-industry convergence. Chapter 7 focuses on convergence innovation in specialised textile machinery suppliers in Korea which includes detailed description of the processes of convergence innovation, textile machinery innovation in Korea and the degree of convergence innovation. The author also describes two types of convergence innovation in textile machinery suppliers, namely outside-in convergence and inside-out convergence, looking at the experience of the firms TnS and Keumyong respectively. An

extension of the application of convergence innovation is found in Chapter 8 in the context of city innovation system. The chapter explores density of patenting activities and intensity of knowledge ties developed to fuse new industries and the evolving knowledge structure of Kuala Lumpur that contributed to national economy and shaped the path of convergence innovation. The author provides an interesting case study on convergence innovation in the railway technology in Malaysia.

Policy implications with respect to innovation policies for encouraging convergence innovation drawn from the various chapters are presented in the concluding chapter. The different studies reflect the diverse perspectives in managing convergence innovation in promoting specific industries and technologies in East and East-Asian countries. The author summarises these different perspectives into spatial, process, use-supplier, R&D, human side, institutional and cultural perspectives. Indeed, this book illustrates the importance of convergence innovation as a primary driver of the fourth industrial revolution. It is a must read for researchers and managers interested in developing strategies and capabilities of convergence innovation for value creation.

Halimah Awang
Senior Research Fellow
Social Security Research Centre
Faculty of Economics and Administration
University of Malaya
E-mail: halima@um.edu.my