

New Frontiers in Regional Science: Asian Perspectives

Volume 17

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New Frontiers in Regional Science: Asian Perspectives

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Innovative ICT Industrial Architecture in East Asia

Offshoring of Japanese Firms and Challenges
Faced by East Asian Economies

 Springer

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Preface

Will Asia continue growing in the twenty-first century? How will Asia change its economic structure? What kind of interdependence will Asia and developed countries have?

Entering this century, there have been prolific discussions on Asia's future. Much research by international institutions, such as the World Bank, the Asian Development Bank, and the OECD, predicted that in the first half of this century, the Asian region will occupy the dominant position in the world economy. On the other hand, there are indications that Asia's growth will be fraught with difficulties. A World Bank study in 2007, "an East Asian Renaissance", discussed necessity of "looking for strategies to move to rich country status". Another World Bank study in 2012, "China 2030" estimates that out of 101 middle-income economies in 1960, only 13 countries became high income economies by 2008. It calls this phenomenon the "middle income trap". Many researchers have become highly interested in whether or not Asian countries could escape this trap. The issue has also been cited from a population composition perspective. Not a few Asian countries are now going towards aging societies. The ratio of working population to non-working population has been decreasing or will start decreasing in many Asian countries, including China. This implies a shift from the so-called population bonus to the population onus phase is occurring in Asia.

In retrospect, Asia's growth for more than half a century was achieved through the globalization of manufacturing. Multinational companies, mainly Japanese and the U.S., engaged in the offshoring of manufacturing processes amidst the intensification of international competition. East Asian countries gained a foothold on growth and development by taking advantages of a large number of low-wage labor force.

Some manufacturing firms in East Asia have been changing their business model. In the 1980s, Taiwanese firms manufactured products for U.S. firms. In the 1990s, Taiwanese firms started establishing their factories in China at the large scale and exported the products to the U.S. and Japanese firms from China. In the 2000s, along with the growth of the Chinese economy, Taiwanese firms increased

the R&D investment for their subsidiaries in China and provided more products for the Chinese market. On the other hand, Japanese manufacturing firms established many factories in China. These firms produce components in Japan, assemble them in China, and export their products to Japan, America, and Europe. In the 2010s, they are transferring their factories from China to Southeast Asia due to the rise in labor costs.

Entering the 1990s, service activities also came to be vigorously transferred across national borders due to the further development of Information and Communications Technology (ICT). U.S. and European ICT firms aggressively adopted this business model. Becoming an offshoring destination for software outsourcing and call centers, India acquired the latest technology for software development. Leveraging its relatively less accented English capability, the Philippines became an offshoring destination for call centers and other business process outsourcing. China also became the offshoring destination for software outsourcing, call centers, data entry, and other business process outsourcing for Western and Japanese firms. Firms in Vietnam and other East Asian countries are imitating the business strategies of Indian and Chinese firms.

The changes in offshoring phenomenon are dynamic, and its impact on Asia is deepening. As Chap. 4 shows, some Japanese manufacturing firms are outsourcing the design process to their Vietnamese subsidiaries by taking advantage of ICT. Japanese headquarters often have difficulty in hiring young and excellent CAD (Computer Aided Design) engineers, while their Vietnamese subsidiaries hire excellent engineers locally. ICT allows the communication between headquarter and subsidiaries, and the easy transfer of the design from Vietnam to Japan at a low cost. The able Vietnamese engineers are now indispensable for the Japanese parent firms. This fact shows that offshoring promotes the business activities of the firms in advanced economies. The foreign firms provide products and services with lower cost and better quality by using offshoring.

The above story also shows that East Asia is now emerging as a region for supplying a large number of skilled workers required for the business activities in developed economies. Advanced countries face the shrinking of the middle class, which normally is the source of intellectual labor. The emerging countries in East Asia, whose development phases vary from country to country, supply large amounts of human resources, not only the conventionally low-waged but also of the intellectual sort.

Offshoring brings technology transfer. Without technology transfer, firms in developing economies are often not able to supply for the products and services with which the clients in advanced economies are satisfied. Technology transfer encourages the emergence of the knowledge-based economy in East Asia.

Western and Japanese firms are also targeting the potentially huge service market of offshoring destinations of East Asia. As we mentioned, Asia emerged as an economic zone that saw the rise of the middle class. Firms in advanced countries increase their investment in Asia, which accelerates further economic growth and technology transfer. As a result, the development of service activities in Asia is one of the important factors to promote the growth of the world economy.

This book deals with the development of ICT industry in East Asia and focuses on the effects of offshoring of software development, business process, and manufacturing, especially by Japanese ICT firms. We analyze how the offshoring has affected the local industry, how ICT firms in advanced countries have taken advantage of offshoring, and how the local countries have tried to promote the development of the ICT industries. We will show that offshoring has had a significant impact on the development of the ICT industry and ICT-based service activities in East Asia, and that the interdependence between developed countries and emerging East Asia has been becoming stronger. This research suggests that the relationship between Japan and East Asian emerging countries are moving towards the integration in intellectual as well as manual activities.

This book consists of ten chapters. Chapter 1 provides an overview of the offshoring of global ICT-based services. The variety of services has been offshored to developing countries. Knowledge process outsourcing activities, such as business consulting, business analysis, market intelligence, and legal services are also offshored. East Asia is the major destination of the offshoring. Many East Asian countries, such as China, the Philippines, and Vietnam, have been becoming offshoring destinations, following India.

Chapter 2 shows that the offshoring of Japanese ICT vendor and user companies has been gradually increasing and discusses the reasons behind such increase. The offshoring of these companies goes mainly to East Asia. This chapter also discusses that East Asian countries are in the process of forming an economic zone of knowledge-based economy. Intellectual processes and white-collar jobs are being transferred to East Asia, giving rise to quality upgrading through the accumulation of knowledge.

Chapter 3 analyzes the current state of Japanese ICT firms' software development and other business activities in East Asia. Japanese ICT firms have implemented offshore software development in China at a large scale. This chapter examines its influence on the improvement of the technology in the Chinese software industry. At the same time, Japanese ICT firms plan to expand their offshore development and software business in Southeast Asia. However, these firms are poor at management of foreign subsidiaries. This chapter discusses the reasons for the poor international management.

Chapter 4 investigates the offshoring of the Japanese manufacturing industry through the case studies of Japanese die and mold firms in Vietnam. Digitalization makes possible the decoupling of design and production processes. However, designers cannot design functional dies and molds unless they understand production processes. Therefore, Japanese headquarters relocate to Vietnamese subsidiaries not only simple design and production activities but also integration activities between design and production that are highly skill-intensive. This chapter conceptualizes this transfer as "comprehensive offshoring."

Chapter 5 examines the development of the ICT/BPO (Business Process Outsourcing) industries in Dalian, China, which is noted for being the destination of offshore software development and BPO of Japanese and Western ICT companies. This chapter analyzes the critical factors for competitiveness of Dalian's ICT

industrial clusters based on Michael Porter's Industrial Cluster Theory (also known as the Diamond Framework). The chapter also discusses that due to the rise of labor costs and depreciation of the Japanese yen, Dalian's offshore industry is now at the stage of searching for a new way of development.

Chapter 6 overviews the development of the ICT/BPO industries in Vietnam. Very early in this century, the Vietnamese government embarked on the provision of ICT infrastructure and the promotion of the software industry, and has become one of the most attractive global offshoring destinations. The country has especially attracted the attention of Japanese firms as the offshoring destination due to the rapid rise of the labor cost in China. Vietnam's software industry is collaborating with Japan in strategically targeting Japan's ICT-based services offshoring. In addition, the small- and mid-sized software firms are proliferating at a tremendous rate, and the government has been supporting the expansion of the ICT/BPO industries.

Chapter 7 analyzes the BPO industry in the Philippines driven by U.S. and European offshoring. The industry is a leading source of economic growth of the country. This chapter presents the current state of the BPO industry and examine whether the Philippine BPO industry can bring about shared growth in the country. In addition, Japanese ICT firms will play an important role to promote the development of the industry in the future. This chapter discusses how Japanese firms overcome their weakness vis-a-vis Western firms, and shows the possibility that their business activities may alleviate the middle income trap of the Philippines.

Chapter 8 provides a macro perspective of the ICT sector in the Philippines. The analysis focuses on two structural phenomena that have been associated with the middle income trap: early deindustrialization and product trap. This chapter uses the Kaldorian Laws to study the ICT software sector, and uses product space proximity and input-output tables to study the ICT hardware sector. The analysis indicates the possibility of the premature deindustrialization, and the possibility of the product trap for the economy in general, and for ICT-related manufacturing industry, in particular.

Chapters 9 and 10 analyze from both macro and micro perspectives Taiwanese ICT hardware industry. Chapter 9 tracks the growth of this industry from a macro perspective. The industry established the cross-strait division of labor with mainland China. Consequently, Taiwanese ICT manufacturers have been increasing R&D in China in order to quickly respond to clients' demands. They also need to continue developing high value added products. This chapter shows that Taiwanese ICT hardware industry has transformed its business models to adjust to the change of economy and the technological improvement.

Chapter 10 focuses on the Original Design Manufacturing (ODM) business of the Taiwan's ICT hardware industry. Taiwanese firms received technology transfer from U.S. firms on ODM contracts, which enabled them to become the world's leading personal computers manufacturers. Along with the falling of global demand for personal computers, they shifted their business to internet servers, and then

started creating their private brands of servers. This means that Taiwanese firms have been becoming competitors of U.S. ICT hardware firms. This chapter reviews how Taiwanese original equipment manufacturing (OEM) firms have changed their business models.

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What effects has the global ICT-based services offshoring had on Japan and Asia? This book attempts to study the prospects that have been revealed from the perspectives of Japan and the emerging economies. Through this research, we focused on the difficulty but inevitability of the knowledge and technology transfer through offshoring.

This book was naturally made possible through the cooperation of many people. Special thanks are due to the following individuals and companies who gave us valuable information and comments about ICT-based services offshoring at the time of seminars at Nagoya Institute of Technology, Osaka City University, Nagoya University, the University of Asia and the Pacific (Manila, the Philippines), and Foreign Trade University (Hanoi, Vietnam) and accepted the company visits as interviewees for our research: Bernardo M. Villegas and Peter U. Lee (Professors at the University of Asia and the Pacific); Peng Huy (Lecturer at Royal Phnom Penh University, Cambodia); Chiaki Kitagawa (President of Gifu Kogyo Co. Ltd., Gifu, Japan); Pham Dinh Luat (Director of Gifu Kogyo Vietnam, Ltd., Ho Chi Minh); Masayasu Mori (Management Director of Japan Technical Steelworks Co. Ltd., Phnom Penh); Yukio Watanabe (President of Nagoya Precision Mold Co. Ltd., Nagoya); Motomi Hattori (President of Hattori Industry Co., Nagoya); Koji Masuda (President of Tsukiden Global Solutions, Inc., Manila); Okuda Masayuki (Senior Researcher of Juroku Research Institute Company Limited, Gifu); Akito Fujii, Akinobu Adachi, and Kazuma Kurushima (Assistants of Nagoya Institute of Technology, Nagoya); and Yoshizumi Endo (Adjunct Professor at Soka University, Tokyo).

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We hope that this volume can contribute in understanding the dramatically changing East Asian region.

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Acronyms and Abbreviations

ASEAN	Association of Southeast Asian Nations
BPO	Business process outsourcing
BPAP	Business Process Association of the Philippines
BPM	Business process management
BRICs	Brazil, Russia, India, and China
CAD	Computer aided design
CAE	Computer aided engineering
CAM:	Computer aided manufacturing
CPE	Customer premises equipment
DR	Design review
DSC	Digital still camera
DSL	Digital subscriber line
EMS	Electronic manufacturing service
IBPAP	Information Technology and Business Process Association of the Philippines
IC	Integrated circuit
ICT	Information and communication technology
III	Institute for Information Industry (Taiwan)
IP	Internet Protocol
IPA	Information-Technology Promotion Agency, Japan
IT	Information technology
ITIS	Industrial & Technology Intelligence Service
ITU	International Telecommunication Union
JETRO	Japan External Trade Organization, Japan
LCD	Liquid crystal display
METI	Ministry of Economy, Trade and Industry, Japan
MIC	Ministry of Information and Communication (in Vietnam), or Market Intelligence & Consulting Institute (in Taiwan)
MOEA	Ministry of Economic Affairs, R.O.C.
MOEAIC	Investment Commission, Ministry of Economic Affairs, R.O.C.

NASSCOM	National Association of Software and Services Companies (India)
NIEs	Newly industrializing economies
NTD	New Taiwan dollar
ODM	Original design manufacturing (sometimes referred to as original development manufacturing)
OEM	Original equipment manufacturing
OJT	On-the-job training
OLED	Organic electroluminescent display
PC	Personal computer
PND	Portable navigation device
PoBMEs	Potentially bigger market economies
R&D	Research and development
SMEs	Small and medium-sized (scale) enterprises
STB	Set-top box
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency of International Development
VCCI	Vietnam Chamber of Commerce and Industry
VINASA	Vietnam Software Association
WLAN	Wireless local area networks