Preface

INFORMATION TECHNOLOGY AND ECONOMIC DEVELOPMENT: WHERE DO WE STAND?

The world economy experienced dramatic growth following World War II. In Asia, that growth was delayed, and recent development has been spectacular. Central and Eastern European countries have achieved high economic growth and have attracted much attention. Some people foretell of the coming of the “Asian era.” Growth rates have been quite high in some countries. Not only newly industrialized economies (NIEs) countries but also those in Association of Southeast Asian Nations (ASEAN) are experiencing remarkable growth, as did Latin American countries in the 1990s. Many African countries also embraced economic growth starting in the mid-1990s. Among the diverse reasons for this growth are the stable and sound social systems that contributed to the development. However, we must note that information technology (IT) or information and communication technology (ICT) has played a significant role in many fields. IT and its use have created major changes and new opportunities. IT, including the Internet, has enormous potential to enrich the lives of people (OECD, 2002). These technologies contribute to the development of business opportunities and distribute information, education, and ideas around the world rather easily. IT also helps in terms of increasing efficiency and speed in the workplace and in the home.

However, IT can be used more effectively to accelerate economic development. For many countries, especially many developing countries, the potential of IT to enhance economic development has not been fully tapped. Although many studies have attempted to analyze the underlying problems, they have yet to be fully examined.

Research have been conducted in very limited or isolated areas. Broader research should be undertaken to examine underlying problems from diverse and broad perspectives. The linkage among IT-related fields we propose as a necessary target of research. There is a strong need for investigating how various aspects of IT influence economic development. This book provides a broader, more comprehensive perspective than existing works in the examination of the relationship between IT and economic development.

The relationship between economic development and IT merits attention in many cases and fields. Some countries have ample natural resources whereas others are limited. Knowledge and wisdom are the key resources of a bright economic future. IT, an area that relies little on natural resources and heavily on brain funds of wisdom and intellectual resources, occupies a central position in the constellation of factors and activities that contribute to economic development. On the other hand, remarkable economic growth has broadened the gap between the rich and the poor. IT can reduce this divide. However, it is important to consider how IT can be converted into useful knowledge.

A well-known theory, the theory of comparative advantage, is relevant to the field of international economics. In an age of global economics, IT is an important determinant of competitiveness and growth.
of both industries and countries. The role of traditional sources of comparative advantage in determining international competitiveness decreases as it is replaced by access to IT and knowledge.

Unfortunately, in many countries IT is still under-developed, but there is much room for further growth (IMF, 2001). The benefits of IT for developing countries seem less clear-cut. In our editors’ field of monetary economics, we cannot forget the 1997 economic crisis in Asia. Some countries’ currencies suffered large fluctuation, producing economic and political instability. The contagion of the currency crisis to other countries was also serious. In the past, similar phenomena had occurred in Latin American countries. Enhancements of efficiency and speed engendered by IT development have greatly increase the volume of fund transfers. Instability of financial and economic conditions, along with the development of financial engineering, has created a crisis. Beyond such financial phenomena, has IT brought wealth to developing countries? In its early stages, IT seemed to improve efficiency and competitiveness and promised a better life for people.

From the view of policy authorities, attempts to improve the delivery of IT should stress the importance of successful transition to well-regulated and competitive service provision to attract needed investment (World Bank, 2006). Promoting the spread of the Internet, for example, is insufficient. Many problems must be solved and obstacles overcome in developing countries for further enhancement of the contribution of IT to society.

What are the reasons behind this lack of development? Where do we stand? Where should we go? The book addresses these issues and future options for growth that are not limited to economics nor to the cases of developing economies. We examine IT impact on various fields, such as politics, education, sociology, technology. The complexities of national and international trade and finance render it impossible to detail this theme fully in a limited volume; our intent, therefore is to contribute to the analysis as much as possible.

Scholars in diverse fields (economics, IT, business/marketing), policy makers, and business persons with both domestic and international interests are the target audience for the book. We believe that this book will satisfy all readers.

Finally, we would like to introduce the content of this book. This book is divided into four sections as described below:

Section I: Towards Sustainable and Permanent Economic Growth. The world economy, including that in developing countries, still has much potential for growth. Attaining growth and maintaining it using IT has some important key points. On the other hand, IT has shifted the structure of economy. Globalization is ongoing. We find solutions in IT for sustainable and permanent economic growth from various aspects. This part considers future directions toward growth.

Section II: Domestic and Global Markets in the IT Age. IT has also affected market structure. Sound, active markets produce growth. IT has changed market and business activities and still has important prospects for future development. This part focuses on various markets and analyzes not only commodity markets but also service markets, including financial and stock markets.

Section III: Innovative Engineering in IT. IT development has been ongoing in various fields. Without it, economic development would be impossible. Also, economic growth will be engineered by knowledge using IT. This part also discusses environmental issues, which are serious all over the world; introduces recent innovations in IT; and analyzes how to encourage economic development using IT effectively and adequately.

Section IV: Socioeconomic Development in the IT Age. This critical aspect of economic development has not been fully analyzed. Recent advances in IT are becoming central to the process of socioeconomic development. IT provides efficient means of using human capabilities and institutional facilities of
countries in both private and public sectors. The contribution of IT is not confined to economic, business, and technology fields. The world is rapidly moving toward knowledge-based social and economic structures. This section also examines e-learning.

Our editors collected 23 interesting, high quality articles from widely published and respected authors who have contributed greatly in their respective fields. Each article constitutes a chapter in this book and is described below.

Section I: Towards Sustainable and Permanent Economic Growth

Chapter I: The Evolution of ICT, Economic Development, and the Digitally-Divided Society. This chapter focuses on the digital divide effects on economic development and social dynamics. Continuing worldwide evolution of Information and Communication Technology since the 1990s may achieve broad convenience for people, but also may contributed to the economic divide between those with digital devices and those without them. New technology such as ICT has two phases in developing economies: inducing new demands and reducing disparity in and between countries. The author constructs a dynamic model that describes the dynamics of the digital divide and economic developments.

Chapter II: Information Technology and Economic Development in Development Countries. Rapid changes and globalization force countries to change their economic structures and the way their developments work. Although the wave of IT based on the economic developments of developed countries seems to be leaping to underdeveloped and developing countries and triggering global competition, there are some concerns. Although IT-based economic development takes place in developed countries in a modern and knowledge-based manner, the same situation does not occur in underdeveloped and developing countries. This chapter considers how to improve economic welfare in all countries.

Chapter III: IT Promotion Policies for Economic Development: The Case of Malaysia. This chapter investigates IT promotion policies for economic development and analyzes outcomes of those policies in Malaysia. This case study provides developing countries with some potentially useful lessons. The author attempts to draw policy suggestions for developing countries to encourage their economic development by showing how Malaysia has promoted an IT-based economy and discussing whether IT has been beneficial to the Malaysian economy.

Chapter IV: Information and Communication Technology and Economic Development in Malaysia. Policy-makers are concerned about many issues with respect to the ICT industry in Malaysia. There is some possibility that over-emphasis on the ICT sector, particularly by government and the market, has increased unemployment. This chapter discusses to what extent the ICT sector has contributed to economic development in Malaysia.

Chapter V: Macroeconomic Announcements, Asymmetric Volatility, and IT: Evidence from JGB Futures. This chapter analyzes the impact of macroeconomic announcements on the conditional volatility of JGB futures returns. As IT continues to develop, the arrival and processing of new market-related information becomes increasingly rapid and its impact expands. Using high-frequency data for JGB futures, the chapter points to the influence of announcement shocks on the dynamics of bond market volatility and provides empirical evidence that the JGB futures market does not immediately incorporate implications of macroeconomic announcement news. The volatility of JGB futures returns persists for a while. Moreover, after distinguishing among types of shocks, volatility is asymmetric. Negative shocks have a stronger impact on subsequent volatility than do positive shocks.

Chapter VI: The Macroeconomic Benefits of Intelligent Enterprises. Information technologies, including e-commerce and the Internet, have brought fundamental changes to 21st century businesses by making more and better information available quickly and inexpensively. This chapter analyzes the
macroeconomic benefits that intelligent enterprises can have on the U.S. economy. They find that the
U.S. economy has become less volatile, with demand volatility nearly matching sales volatility, particu-
larly in the durable goods sector. The evidence also suggests that firms are utilizing new information
technologies to lower inventory levels relative to sales, leading to higher productivity growth, lower
prices, and more competitive markets.

Section II: Domestic and Global Markets in the IT Age

Chapter VII: International Reserves Accumulation: Some Lessons from Asia. The chapter examines
the implications of the reserve accumulation process in Asia. Current account deficits in major industrial
countries have supported third-country reserve accumulation as these countries have promoted export-led
growth underpinned by competitive exchange rates. Asian economies have been willing to absorb the
cost of reserve accumulation to maintain favorable exchange rate levels. This strategy has increased the
likelihood that protectionist measures may surface from abroad, which may have substantial economic
costs. These dynamics are likely to transition to a generalized, real appreciation of the major Asian
currencies and efforts to reduce the U.S. fiscal deficit over the longer term. Under this condition, this
chapter examines suitable macroeconomic policies for development.

Chapter VIII: IT and Thai Stock Market Development. This chapter describes the development of the
stock market in Thailand. For more than thirty years, the Thai stock market has introduced computer
systems to facilitate investors and listed companies both in financial data and administrative work. In
particularly, the Internet trading system has been introduced to enhance market growth. This can be traced
to the increasing volume of trade each day. The growth of Thai stock market has changed the structure
of that nation’s economy and has affected its economic development.

Chapter IX: Key Drivers of Internet Banking Adoption: The Case of Spanish Internet Users. New
technologies encourage the use and development of new shopping methods, such as online and mobile
shopping, which favor economic growth and provide companies and consumers with additional benefits
with respect to traditional shopping channels. In the world of banking, developments in IT have led to
significant improvements. This chapter offers an insight into online banking in Spain. Distinct differences
and common trends between Spain and other countries are observed with clear indications of marketing
strategies deployed by service providers.

Chapter X: E-Commerce Contribution to Economic Growth: The Case of Thailand. This chapter ana-
lyzes the role of e-commerce in economic development in developing economies, particularly Thailand.
The author considers the linkage between e-commerce and economic development to provide a framework
for the study and conducts an empirical investigation of the contribution of e-commerce to economic
development in Thailand using a combination of quantitative and qualitative analysis framework.

Chapter XI: IT and Software Industry in Vietnam. Recently in Vietnam’s IT industry, so called “offshore
development,” such as performing software development of Japanese companies abroad, has attracted
much attention. Japanese companies are also becoming interested in Vietnam as an IT base for software
that ranks next to China and India. IT development in Vietnam has been ongoing. This chapter focuses
on the cases of Japan and Vietnam and considers their problems.

Section III: Innovative Engineering in IT

Chapter XII: The Influence of New Information and Communication Technologies on Transac-
tion Costs of Micro-, Small- and, Medium-Sized Enterprises. Microenterprises are more significant in
number than small, medium, and large enterprises (SMEs) in Indonesia. On the other hand, IT is the
one solution alternative for SMEs in Indonesia, including microfinance. This chapter presents a lesson learned regarding microfinance management from some developed countries that have achieved relative success in microfinance empowerment. The authors focus on the organization model for microfinance, including benefits of IT, and analyzes the prototype model of the Internet in microfinance management in Indonesia.

Chapter XIII: Information Technology Industry Development and the Knowledge Economy. Knowledge has become a third major factor of production, in addition to the traditional factors—labor and capital. Many countries around the world are looking for ways to promote the development of the knowledge economy, and information technology industries in particular. This chapter provides an in-depth analysis of the IT industry in four countries over a five-year period: Finland, Israel, New Zealand and Singapore. Their study reveals that four of the five endogenous variables studied have a close relationship to the development of IT industries in small developed countries. These variables are research and development, technological infrastructure, firm strategies, and capital availability.

Chapter XIV: Information Technology and Environment. Although our economy and our society are being built on decentralized information networks of interaction powered by the Internet and IT, the spatial pattern of human settlement is characterized by an unprecedented territorial concentration of population and activities. The largest metropolitan settlements in the world are certainly already in the so-called developing world and this will be increasingly the case. More than half of the projected population growth of China, a developing nation, will take place in cities. This chapter employs mathematic models to simulate the environment change. Using IT is important to solving the problems associated with this new phenomenon.

Section IV: Socioeconomic Development in the IT Age

Chapter XV: International Institute for Knowledge Management. The primary function of formal education has always been to induct the young people into the culture of the community, society, or nation. Life educates and education in life is correct in general, but, when a formal system of education is organized, society selects from all of those cultural experiences to which the child is exposed those aspects of its culture regarded as most valuable for their own coherence and survival. This chapter illustrates this concept and provides economic and other views that are important factors for development.

Chapter XVI: Application of Computer Technology in Mechanical Industry of China. With the constant development and constant completion of function, and its rapid popularization in the world, the impact of computer technology on China’s mechanical industry is more and more far-reaching. CAD/CAM/CAE, CIMS, computer controlling and network information play a very important role in the development and promotion of a quality mechanical industry in China. Application of computer technology has made enormous contributions to improving manufacturing at the industry level and economic development in that country. This chapter analyzes the application situation of CAD/CAM/CAE technology, CIMS, computer control and network IT in China’s mechanical industry of China.

Chapter XVII: A Study of the Relationships between Economic Climates, National Culture, and E-Government Readiness: A Global Perspective. Despite the importance of e-government, little research has been done on the subject. This chapter develops a conceptual model that highlights the influence and impact of the contextual and cultural factors on e-government adoption. The chapter describes the nature of relationships in the authors’ conceptual model and theorizes the reasons for the existence variation in different economies. The conclusions are pertinent both to academia and policy-makers.

Chapter XVIII: Society and World Wide Web in Developing Countries: The Case of Turkey. Turkey is the site of some interesting characteristics in IT-related industry. This chapter provides a review of
the literature on Internet and e-commerce adoption in developing countries and discusses existing infrastructure and demographic details of Turkey. Moreover, to identify the profile of Turkish Internet users, this chapter provides the results of detailed investigations into types of popular Web sites, number of visits, and time spent on the net. Using the findings, the author provides suggestions for strategies to promote electronic commerce.

Chapter XIX: E-Learning Implementation and Its Diverse Effects. This chapter investigates how e-learning programs contribute to society by promoting economic growth and analyzes a survey performed at a Malaysian university to explore into the general attitudes toward e-learning and the relation between these attitudes and those toward new technologies. This chapter takes a look at the overall university experience in relation to the e-learning initiative and shows how e-learning systems may foster economic growth.

Chapter XX: The Significance of the Existence of Women’s Colleges and Their Entry into Science-Related Fields. This chapter reviews discussions on the relationship between mathematical sciences and gender in higher education. The chapter explores the problem of digital divide in terms of gender and provides implications for the economy at both individual and social levels.

Chapter XXI: Potential Challenges and Benefits of Information Technology and Economic Development in Sri Lanka. This chapter discusses potential challenges and benefits of implementing e-learning in Sri Lanka by reviewing the awareness and readiness of selected higher educational institutions. Awareness of e-learning among educational institutions is very high, but their investment in developing e-learning applications is poor according to the survey. Most of them use Internet-related e-learning sites just for the sake of it and not for real online learning. There is a trend to create Web sites at most of the institutions. The author considers and suggests an appropriate model for e-learning in Sri Lanka.

Chapter XXII: Socioeconomic Influence on Information Technology: The Case of California. This chapter examines the influence of socio-economic factors on the employment, payroll, and number of enterprises of three technology sectors for counties in California. It shows that factors that are important correlates of technology sectors are professional/scientific/technical services, other services, and educational services, ethnicity, and college education. As a whole, the findings emphasize the importance of the association of socio-economic factors with the per capita magnitude of the technology sectors. This chapter suggests steps that can be taken by the state of California and its county and local governments to foster technology and reduce the digital divide.

Chapter XXIII: Strategies for Cultural Economic Development in Kamakura: Managing Digital Contents and Cultural Assets. This chapter explores an IT-based approach to managing cultural assets that can lead to local economic growth and examines how cultural assets can be leveraged to boost regional economy as well as how IT can be employed for this purpose. Emphasis is on creating a regional self-aid and support system that involves development of and ensuring high-quality human capital, enhancement and retention of the values of cultural resources, and creation and maintenance of a highly reliable and sustainable networking environment.

REFERENCES