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Abstract of Doctoral Dissertation

ANALYSIS OF INFORMATION COMMUNICATION TECHNOLOGY ADOPTION CAPACITY IN DEVELOPING COUNTRIES

発展途上国における情報通信技術の採用に関する分析

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Abstract

In the globalized environment, the economic growth significantly depends on the countries capacity to develop, to apply new technologies and vice versa. Diffusion of information communication technologies is a global phenomenon. Despite of rapid globalization there are considerable differences between nations in terms of adoption and usage of new technologies. This study aims to draw together the highly eclectic literature on the diffusion of Information and Communication Technology (ICT) in order to know what have been done, highlight the generic issues, relevant to policy and will initiate further research and develop potential opportunities. This study also highlights the low level and high level income countries data and ICT policies frame work to draw conclusions and some case studies as an example. The objective is to review and find the social economic factor for adoption of ICT to make policy recommendation for the development of the country.

This study uses the different approaches to solve the technology adoption problem In the First phase it uses the content analysis, regression analysis and Bass Model. We find the more familiar cases of Information Communication Technology and policy, quantifies the government activities and actions, and evaluates the impact of the policies on the country's economic development by using the World Bank/UN/OECD development indicators. The key points extracted from the historical analysis are compared with the development indicators to confirm the impact of policies on the economic growth. Then in the second step demonstrates the strategies of governments to influence the adoption of technology. Game model is constructed subject to preferential policy of technology adoption. The study finds the Nash equilibrium of the game under the specific strategies of the government.

Outline of the Dissertation and Chapter Summaries

Chapter 1

Introduction: This chapter provides the research background, research problem, research significance, research process and outline of the dissertation.

Chapter 2

Literature Review: This chapter aims to provide the highly eclectic literature on the adoption of Information and Communication Technology (ICT) in order to know what has been done, and highlights the generic issues relevant to ICT adoption, ICT policy, government role, industry and university.

Chapter 3

ICT Policy Landscape in Asian Countries: This chapter explores the ICT adoption trend in countries like Japan, Korea, India and Pakistan. We explain the ICT policy changes and economic dynamics of developed and developing countries. We find the more familiar cases of information & communication technology and policy, quantify the government activities and actions, and evaluate the impact of the policies on the country's economic development by using the World Bank/UN/OECD development indicators. Later in this chapter, we introduce the Bass Model with different coefficient between different time periods of these countries. The key points extracted from the content analysis of ICT policies are compared with the development indicators to confirm the impact of policies on the economic growth.

Chapter 4

Information Communication Technology Adoption in Industries: This chapter explores the barriers against ICT adoption for firms and identifies opportunities for ICT adoption in industries of developing countries. Hence, trend of technology adoption in firms of developing countries is studied. Pakistan, a developing country of Asia, is selected as a case study. This chapter uses the content analysis method and OECD "Imlinker" software for analysis. This chapter highlights the ICT adoption problem in firms and proposes analysis by concordance of technical data and economic data. The

concordance finds the gray area of the ICT adoption in firms. Then chapter provides the strategies of governments to solve the adoption of ICT problem among firms. ICT advances offer new paradigms for development. However, developing countries are still behind to take full advantages of these improvements due to problems faced by them in adopting the technology. A game model is constructed subject to specific condition for technology adoption. The game consists of two players, government and firms. The game finds the best strategies of the game under three specific conditions. The game solves the conflict of ICT adoption decision between governments and firms. A real case example of Pakistan's Telecommunications Sector is taken to explain the government game.

Chapter 5

Globalization and ICT innovation policy: absorption capacity in developing countries: This chapter is about the new role of academic institutions in the economic development of developing countries. Educational institutes are significant in propelling economic development as they are the powerful drivers, technology centers, developers and investors. Universities can affect the economic growth of developing countries. The study identifies the current ICT innovation in the field of education and analyzes the case of developing and developed countries. To demonstrate, we do an in-depth study of Pakistan's education system. The chapter constructs a game model subject to preferential policy between Government and Universities. It offers games strategies that give the overview of the role of the government to promote the quality of education. Then, analysis finds the equilibrium of the game by using three specific conditions. The result shows that better ICT policies lead to quality education that foster the development of the country.

Chapter 6

Conclusion: This chapter summarizes the key findings of the dissertation as well as presents the main outcomes of the dissertation. Some proposals and recommendations for ICT policy formulation are put forward.