

UNIVERSITI TEKNOLOGI MARA

**GLOBAL DIGITAL DIVIDE: THE
IMPACT OF INFORMATION AND
COMMUNICATION
TECHNOLOGIES (ICT) ON
ECONOMIC INDICATORS**

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ABSTRACT

The advancement of information and communication technology (ICT) over the last decades has brought significant economic and social improvements to both the society and countries. Not only does it revolutionize the global economic structure, ICT is fast becoming a key tool in driving economic growth by promoting productivity and competitiveness, stimulating international trade as well as paving the way for more and better jobs in the market. In the body of literature, there exists a general consensus among researchers that ICT has significant and positive relationship with economic growth. However, most of the evidences come from microeconomic studies, where the firm or countries are typically restricted to specific sectors or regions, or even grouped according to different levels of development. Evidence on impacts of ICT on economic growth across different regions on the other hand, is still scarce and requires further investigation. With the endogenous growth theory as a theoretical basis, this study therefore attempts to analyze further the impact of ICT on economic indicators for five different country groups, namely Africa, America, Arab, Asia and Europe, over a 9-year period of 2006 to 2014. In this study, ICT is defined according to two dimensions – ICT access and usage – where they are proxied by four different measures, namely fixed broadband subscriptions, fixed telephone subscriptions, mobile cellular subscriptions and Internet users. By employing several advanced econometric techniques such as Panel Feasible Generalized Least Squares (PFGLS), Fixed and Random Effects Instrumental Variables (FE/RE-IV) and Arellano-Bond Generalized Method of Moments (GMM) estimators, the impact of each measure of ICT access and usage is separately estimated on three different economic indicators such as GDP per capita, trade openness and unemployment rate. This study also extends both static and dynamic panel data analysis by investigating the role of human capital, namely education and health, in influencing the link between ICT and economic indicators. In general, although findings revealed that there is varying degree of significance of ICT on economic growth indicators across the five country groups, impact of ICT is more pronounced particularly in Asia and Europe. The significance of ICT enters with mixed coefficients, where overall they emerge with positive relationship with GDP per capita and trade, and a negative relationship with unemployment in most model specifications. The results of the extended analysis also render human capital (education and health) as important moderators in influencing the impact of ICT on the economic indicators.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

After 1990, the world began to globalize and has since undergone a massive growth and advancement of the Information and Communication Technologies (ICT) sector. The influence of ICT is evident: it enables multidimensional transformation of economic, social, political and cultural aspects of life. With increased efficiency in processes and support for innovation, ICT helps businesses to achieve substantial cost reduction and boost its overall productivity. ICT-enabled public sector also makes the public sector leaner, faster and more citizen-friendly with improved service delivery.

The progress in ICT hardware, software as well as electronic devices have resulted in affordable general purpose technologies (Bresnahan & Trajtenberg, 1995) that are useful for everyday lives. In today's digital age, ICTs are just as essential as basic needs like water and electricity supply where many would find it hard to imagine living without, especially the Internet. Yet, a report by International Telecommunication Union (ITU, 2017) reflects a rather surprising reality: although the amount of world's households having Internet access has increased over the years to more than half (53.6%) in 2017, however, the number of individuals using the Internet (the number of people going online) are still less than half of the world's population at approximately 48.0%. Such an evidence proves that not only there is still a portion of the global population who remains unconnected to the Internet, it also goes to show that not everyone effectively uses the Internet and enjoy all the benefits that come with it despite having access. This disparity in ICT access and usage is the very condition that gives birth to a phenomenon called, the digital divide.

Limited access to and usage of ICT can deprive one of economic and social opportunities. The digital divide would lead to further exclusion of the underprivileged and disadvantaged groups if it is not promptly tackled. At the national level, poor nations without heavy ICT investment and strong regulatory ICT frameworks may be placed at a competitive disadvantage by the wealthier and more digitized nations in the global economy (Norris, 2001). However, merely concentrating on developing the ICT sector to accelerate economic growth alone is not sufficient. It has to be accompanied