

## Chapter 20

# Economic Impact of Information and Communication Technology in Higher Education

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### ABSTRACT

*Developed nations are experiencing economic growth through the advantages associated with Information and Communication Technologies (ICT). Digital resources along with Massive Open Online Courses provide educational opportunities to an ever-expanding population of students. Some areas, however, lack Internet connectivity and are unable to take advantage of ICTs needed to support the demands of global economies. Cloud computing is growing in usefulness as universities are able to work with remote applications and store data on cloud servers. Along with the ubiquitous Web and ICT resources, there is also the risk of too much information, which can negatively impact job performance and satisfaction. Even with reports of faculty concerns in disproportionate amount time needed to offer online courses, the university is experiencing growth in online education, extended opportunities for global education, and a challenge to manage an incessant flow of digital information.*

### INTRODUCTION

To understand the term Information and Communication Technology, one must identify a specific category in which ICTs are applied. Generally ICT can be defined as any transfer of information through the use of digital means (Zuppo, 2012, p. 13). A review of the literature by Zuppo (2012) reveals a more complex definition with references to overlapping ideas, tools, and environments. For example, the global economy has benefited

from the growth of applied ICTs in business and industry According to Angeleski, Mitrevski, and Janeska, (as cited in Danco & Gomez, 2010), a level of e-business readiness can be correlated with ICT readiness and applied uses of ICT in certain business sectors.

Businesses benefit through networked communication and products exchange. The impact of ICT on the socioeconomic level also is of importance. Doong and Ho (2012) used several different indices to show the relationship between

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uses of ICT and economic growth in countries. According to International Telecommunication Union (Katz, 2012) wealth of a country could be equated with access to digital resources through broadband connectivity. In addition to economic growth, global agencies monitor and track use of ICTs in education. ICT in education includes hardware, software, and competencies related to necessary tools used for digital literacy (Educational Testing Service, 2007). However, there are regions of the world that lack training and tools needed to achieve ICT competency. In colleges and universities use of cloud computing has elevated access to open (or free) resources and increased enrollment in online courses, including the Massive Online College Course (Educause, 2013). However, there are cautions to be observed when engaged in the nonstop, 24/7 flow of information. A phenomenon known as Information Overload (infogineering, 2013) is causing reduction in job satisfaction and level of performance in both education and business, yet online course offerings continue to grow. This is evident through the consistent movement from classroom to virtual environment over the past decade (Chronicle of Higher Education, 2013). With increased access to online courses and availability of digital technologies come the potential for economic and social change expanding to a global scale.

## **ECONOMIC IMPACT OF GLOBAL CONNECTIVITY**

Universities and colleges are facing major changes with the relationship between the institution and its students. Online courses and degree programs have contributed to what Altbach, Reisberg, and Rumbley (2010) refer to as *massification*, a term used to describe the growth of college enrollment at a global scale. In 1960, the United States led the world in traditional college-age student enrollments. In a subsequent report (National Center for Public Policy and Higher Education, 2008), the

U.S. still ranks high but follows Korea, Greece, Poland, Ireland, Belgium and Hungary with the highest rankings of young people ages 18-24 enrolled in college. Although massification in higher education appears to impact many of the developed countries, ranking for sub-Saharan regions remains consistently low for college enrollments. Countries in sub-Saharan Africa, and middle and eastern Asia continue to report lower enrollments at all levels of education (UNESCO, 2010, pp. 56-57). These disparities could be an indication of the digital divide that continues to be a worldwide problem (OECD, 2003; 2013). UNESCO's reports provide information on policies related to use of ICT, availability of electricity, telephone, and broadband. A major goal for UNESCO is to increase access to educational resources in digital format. Their mission is grounded in the belief, ". . . a student in a developing country can now access the library of a prestigious university anywhere in the world," and, "teachers can gain inspiration and advice from the resources and experiences of others," (UNESCO, 2013). While formulation of educational policy could be a starting point for ensuring equity in access to digital resources, UNESCO describes a more basic obstacle—lack of electricity and broadband connection to the Internet. In Latin America and the Caribbean, electricity is available in most primary and secondary schools. This is the same for all Caribbean countries, with the exception of the Dominican Republic, where challenges remain. The situation is somewhat different in some South and Central American countries where fewer than 80% of primary schools have electricity (Wallet, 2012).

Similar problems exist in other regions of the globe. Africa reported 3.5% of the world's usage of the Internet compared to Europe, which reported 27.4% and North America at 18.9% of the world's usage. Asia with over half the world's population reported 36.7% of the world's usage of the Internet (Abosse, 2013; Internet World Stats, as cited in Coiro, Knobel, Lankshear, & Leu, 2008, p. 3). More recently, overall growth

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