The Impact of Information and Communication Technologies on Developing Countries

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Abstract: This paper presents the impact of information and communication technology (ICT) on different areas of development of developing countries. This paper implies on effect of ICT in the lives of people in developing countries, and how economic activities like manufacturing and local craft derive a benefit. Various ICT projects are implementing in developing countries and they have sustainable effect on economics and communications. The problems appear here are lack of infrastructure, government policies, and literacy low level of local people. We present a model that model indicates convergence of different areas in economy, environment, business, society. These areas include economic performance, employment, health, people participation, education, innovation and research, and privacy and security. As samples of ICT developing, we consider some of Asia countries and discus about how they make development in information and communication technology.

Key words: Information and Communication Technology, Industry, Developing countries, ICT literacy.

INTRODUCTION

Information and communication technology offers fundamentally changes in living of people. It affects many aspects of business, economy, and government. It is playing key role in economic, data transmission such as telecommunications, mobile, and Internet communications globally. Developing of countries and regions are out of mind without incorporation in ICT. Various ICT projects are implementing in developing countries and they have sustainable effect on economics and communications. The problems appear here are lack of infrastructure, government policies, (Paterson A., 2007) and literacy low level of local people, language, cost, and social and cultural norms.

While, advances in information and communication technology are making many regional people to work in manufactories, it makes other jobs in industries like banking, insurance, and publishing. Countries like India, Malaysia, India, and Philippines were the early leader in this area (Hafkin et al., 2001).

There are two aspects of using ICT: firstly, at work environment as a tool of production in manufacturing (Stewart et al., 2005), industries, and office work. Secondly, as a tool of communication for exchange the required information for instance electronic mail (email). Email is an information technology application that people in developing countries use it for communications, while, various problems such as lack of quality of service provision by internet service providers, bandwidth limitations, and government policies make such this application uses difficult for people in these countries.

Asian countries like Japan, South Korea, Taipei, and China have sustainable role in spread of ICT around the world. Indonesia, Thailand, and the Philippines (Prakash et al., 2001) have key role in division of labor. India has contributed in software development and different type of required programs in ICT. In this case, ICT has enabled many Asian countries to take new technologies. Beside, there are parts of Asia where still live without ICT reach ability due to lack of suitable infrastructure, low level of human resource development, and low level of ICT literacy, lack of required resources. Asian countries use ICT products for export purpose. They do not use them for economic development and poverty reduction.

This paper is divided into four sections. The first provides impact of ICT on the enhancement the developing countries. In this section, we propose a model that it indicates convergence of different areas in economy, environment, business, society. These areas include economic performance, employment, health, people participation, education, innovation and research, and privacy and security. The second section discusses benefits of ICT utilization in developing countries. All of developing countries found out tremendous potential of ICT not only as a tool for developing countries and creating jobs, but also as a tool to improve the standard of living. The third section presents Internet penetration in different countries. In this section, we present a study that it shows Internet usage in Asia region being most digitally connected. Efforts to connect the people in rural areas and villages to the global network and improving communication in these countries cause this increase in
Internet Penetration. Finally, section four discusses ICT development in Asian countries. This section presents sample countries from Asia countries that have improvements in ICT areas.

**Impact of ICT on Enhancement The Developing Countries:**

Impact of ICT on developing the countries illustrated presented model in Figure 1. The model indicates convergence of different areas in economy, environment, business, society. These areas include economic performance, employment, health, people participation, education, innovation and research, and privacy and security (Frediksson *et al.*, 2010). Impact of ICT arises through ICT demands and ICT environment and it might be influenced by following items:

- Infrastructure and ability current infrastructure to ICT development.
- Literacy level of people and their skills in information technology
- Government ICT policy. For instance, filtering internet content, controlling transmitted data.
- E-government. It is done by electronic processes by providing information via Internet. One advantage of this item might be mentioned is availability at any time and anywhere. It helps to save time to physically access.

![Fig. 1: Impact of ICT on Developing the Countries.](image)

The Internet service providers must deliver a high quality of service to the customers. The key factors on Quality of services could be:

- Bandwidth optimization. It can increase or decrease application’s performance.
- Quality of each connection and less data loss. Packet loss can directly affects on quality of connection
- Application and software optimization. Mobile devices automatically connect to the best available network and seamlessly roam from one network to another network.

Internets service providers (ISPs) should provide content-aware network and constantly optimize it for real-time applications such as video conferencing and online banking. ISPs should be able to route different type of contents to their customers and be able to realize type of contents requested. On the other hand, they should rich content to their customers. Beside, customers need to be able to self select their own content requirements via simple web interface. In some countries access to particular content is illegal, so ISPs should block access to these types of contents. Figure 2, illustrate different types of Internet contents and users.
Benefits of ICT Utilization in Developing Countries:

Nowadays, all of developing countries found out tremendous potential of ICT not only as a tool for developing countries and creating jobs, but also as a tool to improve the standard of living. Following is a list of benefits of ICT utilization in developing countries:

- Improvement of the standard of living of the regional people.
- Establishment of information infrastructure: such as broadband communication backbone.
- Development of human resources for ICT by using ICT in education environments and employee of industries and companies.
- Development in ICT industry.
- Beside, mission targets for ICT utilization in developing countries explained below:
  - Increasing the numbers of personal computers or laptops penetration among people.
  - Global access to personal computers in rural areas and villages.
  - Implementation of information kiosks for public usage.
  - Electronic government includes electronic voting, License and identity card issuance.
  - ICT Training in at all levels between people.
  - Provisioning of Internet connection between schools, institutes and internet service providers.

As a section of ICT in developing countries, we can indicate to information kiosk (Nair et al 2002). This kiosk is available to any one who has ability to use Internet. One of target of this ICT service could be provisioning of quick service to the common people through information technology to generate contents that are locally specified. These information kiosks provide various services related to government via internet such as e-voting, License issuance, etc. These are kind of e-government services which are seeking to improve delivery of various services for people to digital revolution.

Internet Penetration:

According to a study by “Internet World Stats” at June 2011, Internet seems ubiquitous in the North America, United States and Europe in comparison to Africa, Asia, and Middle East. Figure 3 presents percentage of Internet penetration in the world.

Then according to this study, from Figure 4 people in Japan, Singapore, Malaysia, and Iran have higher percentages of Internet penetration. This study shows Internet usage in Asia region being most digitally connected. Efforts to connect the people in rural areas and villages to the global network and improving communication in these countries cause this increase in Internet Penetration. Beside, in Asia for example Malaysia government has launched an IT policy to tax reduction for first time buyer of personal computers, among other things. (Nain and Mustafa, 1998)

Figure 4 below presents Internet penetration in some of Asian countries.

As we can found from Figure 3 and 4, developed countries have a high rate of Internet penetration but not all of computers are connected to the Internet. In the industrialized countries such as United States and North America yet where 93% of people connected to the Internet and thus 7% are still without an Internet connection. From Figure 5, by attention to rate of Internet penetration in developing countries in particular in Africa in the last decade, we can found there are attempts to improving ICT in these countries. For instance, Internet penetration rate have sharply increasing in Morocco, Sudan, South Africa.

ICT Development in Asian countries:

In this section, we follow ICT pattern used by Asian countries to in economic and business. Asia and Pacific played an important role in ICT development round the world. In Asia, industry has tremendous spread much more of development. Japan, South Korea, Taipei, and China have been a leader in this part. Hong Kong and Singapore have added more spread in ICT fields in the world through their contributions in manufacturing. Subsequently, Malaysia, the Philippines, and Thailand have joined through manufacturing and packaging. (Prakash et al 2001). Asian countries have been major supplier of ICT products to Americans countries.
Singapore is a developed country in the world. This country has made a systematic attempt to ICT innovation from 1980s. ICT infrastructure and educational standard is absolutely high in Singapore. This country follows new programs for improvement of human resource, development of ICT in industry, and e-government promoting.

Malaysia is centre of ICT manufacturing and electronics factories. Government has a strategy on selected areas to developing of ICT such Cyberjaya city.

Thailand, has less developed ICT sector in particular in villages and rural areas. Personal computer usage and Internet are available for a small part of people. Despite this, Thailand produces significant part of computer
components. Government program to ICT developing in the case of education lead to establish one of big institute in Asia called Asian institute of technology.

Philippines. has clear attendee in ICT industry and activities of ICT manufactory are under supervision of Japanese exports. Availability of ICT is located in Manila and around part of this city.

India has had an important role in developing of computers, computer science, and communication industry via cooperation of high level scientific personnel from India. Beside, Indian professional program companies produce major computer programs in the world. Almost all of software companies have a branch in India and more than 30 percent of Indian ICT company meet requirements if ISO 9000 (Giovannetti et al 2001) and produce ICT components with lower prices in comparison to other ICT companies.

Conclusion:

The success of ICT projects such as e-government depends to e-awareness of the people and computer literacy. It would be one of most important requirements to government to have a strategy to enhance computer penetration. It might be considered that large investment in improving infrastructure will not improve performance without Internet and personal computer penetration. In countries that living is below of poverty line such as India,

implementation and maintenance of ICT projects are not easy and it needs some IT policies for example tax reduction for IT services.

ICT projects to be more applicable need to governments’ objectives have been linked with financial capacity of that state and an economic balance between ICT industry and government without such these strategies; it is possible to projects face to fail within given time frame. Despite of financial problems, ICT can help developing countries to have made a significant improvement in e-government and e-commerce to enhance the delivery of service to their people.

Although, some of Asian countries such as Japan, South Korea, Taipei, China have sustainable role in spread of ICT around the world, however, there are parts of Asia where still live without ICT reach ability due to lack of suitable infrastructure, low level of human resource development, and low level of ICT literacy, lack of required resources. Asian countries use ICT products for export purpose. They do not use them for economic development and poverty reduction.

Fatma Alloo founder of Tanzania media woman’s association in the society for international development and UNESCO (Alloo et al., 1998) describes using of information technology with following sentences: “We must recognize that information technology is here to stay. What we have to decide is whether we either play the game and return it to our advantage or lose out completely.”

REFERENCES


