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Study on the Evolution of Information and Communication Technologies in Developing Countries: a Case Study of Malaysia

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1. Introduction

The evolution of information and communication technologies (ICT) has given most significant impact to today's lifestyles. The advantages of ICT implementation are including the growth in socio-economic, education improvement, and advancement in technological and industrial sector. Recently, developing country governments are starting to launch their own ICT, characterizing it to suit their customs. Despite these advantages, developing countries face many difficulties in ICT implement. It is not only technological, but involves political, social and cultural issues.

Our research is intent to study the recent ICT development and the impact of ICT to developing countries. Malaysia, one of the developing countries, has made massive and significant investments on ICT development and we could see how it has impact their society.

2. Comparing ICT Growth in Various Regions

The reality of ICT development somehow created a digital gap. The phenomenon can be easily seen in the statistics of internet users and fixed line and mobile phone subscribers which is one of the important elements of ICT.

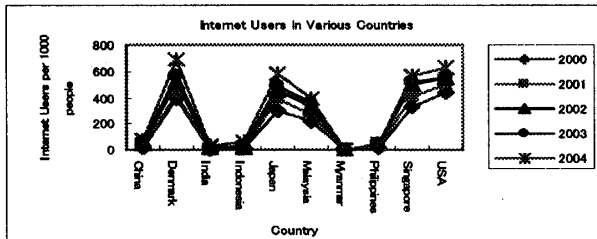


Fig.1. Internet Users in Various Countries. (Source: World Bank)

Figure 1 show within five years, from 2000-2004, the gap of internet usage between developed and developing countries. Developed countries such as Denmark, Japan and USA over 50% of the populations are internet users. However, the usage of internet in other countries is still low even though the number of is increasing every year.

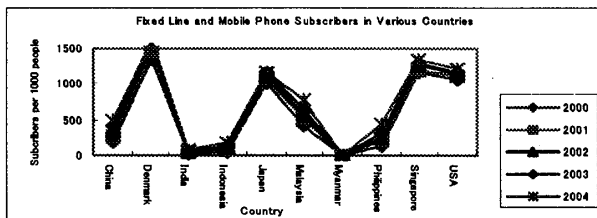


Fig.2. Fixed line and mobile phone subscribers in various countries. (Source: World Bank)

Figure 2 show in within five years, from 2000-2004, the gap in of fixed line and mobile phone subscribers number. The number increase every year and this enlargement will expense the opportunities in bringing the new application of ICT

3. The Impact of ICT on Developing Countries

The impact of the evolution of ICT in developing countries is varied and complex. The impact has move toward a knowledge society on most aspects of developing countries socio-economy. Some of the impacts are stated below.

(1) Economic productivity and infrastructure development: Korea and Taiwan has become a global supply of ICT products and components, followed by Malaysia, Thailand and Philippine in manufacturing and packaging. Many Asian economies now depended to electronics export. A great growth on economy has contributes a great development in infrastructure.

(2) Education: ICT usage provided curriculum, educational software, database access, systems for distance learning, improve resource mobilization, and accomplish distance research especially in Africa region.

(3) Health: HealthNet website links 16 African and 4 Asian countries health care workers with each other database and information and help to improve their health level.

4. Initiatives of ICT in Developing Countries

Various intentions are being put on initiatives to elongate ICT in developing countries. Some of the initiatives are shown in table 1 below.

Table 1. Initiatives in ICT in Developing Countries [1].

Country	Description of ICT Initiatives
India	Developed its own satellites to establish information and communication system that reach rural area.
Egypt	Initiated several IT applications in employment, e-government, and established a Regional Information Technology Development Center.
Tunisia	Established a Regional Information Technology Development Center.
Chile	Developed a successful software industry though a public-private partnership involving firms, universities, and government.
Gambia	Developed an effective telecommunications infrastructure with several applications.

5. ICT Development in Malaysia

Malaysia has put energetic efforts to become an information age nation. US\$55 billion has been allocated for developments under the Ninth Malaysian Plan. In the plan, Malaysia will promote ICT research, extend MSC benefits and encourage IT products and services usage.

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From 2000, Malaysia has focus on ICT development and services including education, health and medical, biotechnology, telecommunications, tourism, entertainment and multimedia elements. The main reason is because the low manufacturing cost in Thailand, Vietnam, and China, Malaysia has no longer keen in manufacturing industries due to the high operating costs.

In the future, grid computing is expected to be a key component of Malaysia's technology including IPv6 (Internet Protocol version 6) and RFID (radio frequency identification) technologies. With the ICT growth, Malaysian exports grew at 13.5 percent a year in 1991-2005, which makes Malaysia the 18th biggest trading nation in the world.

6. Malaysia Multimedia Super Corridor (MSC)

The MSC is Malaysia's appealing wisdom for ICT globalization was officially launched in 1996. The device of MSC is divided into three phases:

In Phase 1 (1996-2003), MSC Malaysia is developed successfully focused on multimedia and communications products, solutions, services, research, and development. In Phase 2 (2004-2010), an interconnection of approximate corridors will be construct and cyber laws global structure relating to digital signature, copyright, computer crime, and data protection. Intelligent cities such as Bayan Lepas Free Industrial Zones and Kulim Hi-Tech Park will join the global cities. In Phase 3 (2010-2020), to accomplish Vision 2020 in becoming a fully developed status, MSC will be established with the found of International Cyber Court of Justice and 12 intelligent cities.

There are seven national initiatives and the key project for MSC the Flagship Application, including e-government, multi-purpose card (smart card), smart school, telemedicine, R&D Cluster, worldwide manufacturing webs and borderless marketing [2].

There are many factors which make MSC is a success and stated in figure 3 below.

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| <ul style="list-style-type: none"> ① Comprehensive package for investors ② Strong socio-economic fundamentals ③ Firm commitment from the Malaysian Government ④ Accelerated human resource training and development ⑤ Competitive costs of doing business ⑥ Ready access to the Asia-Pacific markets ⑦ Widespread usage of English ⑧ Superlative quality of life |
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Fig.3. Success Factors of MSC Malaysia [2].

7. E-Commerce in Malaysia

E-commerce has received a great attention from the government and businesses organization. E-commerce growth in Malaysia is supported by several coincide factors including;

- (1) Increasing numbers of personal computers affordability.
- (2) Continue support and investment from the government
- (3) Implementing e-banking concept in majority of the banks
- (4) The cost to host and run a website is affordable.

However, the implementation of e-commerce in Malaysia is considered slow. Some of the reasons are stated in figure 4.

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| <ul style="list-style-type: none"> ① Only about 35% of Malaysian population owns a PC ② Only about 20% of Malaysian population has internet access ③ Only 0.6% of Malaysians are using broadband access ④ Many internet users never purchased any online merchandise ⑤ Many people linked to e-commerce are with IT specialists. ⑥ Many users in are using internet only for information search. |
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Fig.4. Reasons for the Slow Implementation of E-Commerce [3].

Figure 4 shows why Malaysia is behind in e-commerce growth and it is resulted from the lack of potential e-commerce expose. As a multicultural country, Malaysia has more advantages to explore a larger market and compete with others. The future of e-commerce in Malaysia is expected to be very bright.

7. Issues and Challenges in ICT for Developing Countries

- (1) Economy and Political Structure: The economy is associated with ICT. The stability of economy and politics has brought a great chance to participate in the ICT.
- (2) E-Commerce: ICT is an important factor in e-commerce, but many developing countries are way behind in these areas. The lack in forming an e-commerce policy and standard, convertible currency and technical support is also part of the challenges.
- (3) The Future of ICT: ICT is a challenge for many developing countries. In order to close the gap, they have to seize the new ICT technologies briskly and broadly.
- (4) Problems with ICT Expenditure: The problems include 'Amplifier Effects', 'Security' and 'Employment' and many developing countries refuse to take the challenge [4].

8. Conclusion

The evolution of ICT has given many great impacts. The gap in ICT is obvious but developing countries makes the effort to increase participation with many initiatives. Malaysia is one of the outstanding developing countries in ICT development, has put their initiatives by creating MSC Malaysia and chosen ICT development to achieve developed status in 2020. With ICT ability, they also enable to conduct many ICT applications. Many factors have encouraged e-commerce in Malaysia even though the implementation is slow. There are many issues and challenges towards ICT in developing countries. The matter is whether developing countries are able to take the challenges in ICT development, raising the development of intellectual property, and protecting their traditional culture at the same time.

Reference

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