Book Review

Review of "The Little Data Book on Information and Communication Technology 2012" (The World Bank) in Relation to ASEAN

The World Bank. 2012. The Little Data Book on Information and Communication Technology 2012. The International Bank for Reconstruction and Development / The World Bank, Washington, DC, USA. Available: <http://dx.doi.org/10.1596/978-0-8213-8996-6>.

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The Little Data Book on Information and Communication Technology 2012 (LDBICT 2012) is a joint publication between: the World Bank, Washington, DC, USA; and the International Telecommunication Union (ITU), Geneva, Switzerland (international standard book number (ISBN): 978-0-8213-8996-6; electronic ISBN (eISBN): 978-0-8213-9519-6; digital object identifier (DOI): 10.1596/978-0-8213-8996-6; and stock-keeping unit (SKU): 18996).

The economic region of East Asia and the Pacific includes the following twenty four (24) low- and middle-income state economies (sorted alphabetically) according to the World Bank: American Samoa, Cambodia, China, Fiji, Indonesia, Kiribati, Democratic Republic of Korea, Lao People's Democratic Republic (PDR), Malaysia, Marshall Islands, Federated States of Micronesia, Mongolia, Myanmar, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu and Vietnam.

The Association of South East Asian Nations (ASEAN) includes the following ten (10) countries (sorted alphabetically) from the economic region of East Asia and the Pacific: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

The numerical data extracted from LDBICT (2012) are rearranged and used for the scholarly purpose of review and evaluation of the role of information and communication technology (ICT) within ASEAN. Tables 1-2 and Figs. 1-17 in this contribution are based on the world table and country tables provided in the following pages of LDBICT (2012): p. 2, World; p. 45, Brunei Darussalam; p. 49, Cambodia; p. 106, Indonesia; p. 124, Lao PDR; p. 137, Malaysia; p. 153, Myanmar; p. 171, Philippines; p. 187, Singapore; p. 209, Thailand; and p. 228, Vietnam.

The planned activation of the ASEAN Economic Community (AEC) in 2015 will result in regional economic integration which would depend to a significant extent on the proper use of ICT for "communications connectivity and the development of electronic transactions through e-ASEAN" as stated at <http://www.asean.org/communities/asean-economic-community>.

The ASEAN Economic Blueprint (2007), available at <www.asean.org/archive/5187-10.pdf>, emphasizes on "the application of ICT in all areas related to trade facilitation" for the creation of an ASEAN Single Window using "… acceleration of introduction of information, communication and technology (ICT) for digitalised processing and exchange." However, the reality of having different levels of development of the individual member counties requires a review of the current situation and tendencies in the dynamic and competitive ICT sector which can be done by viewing and comparing a set of distinct indicators provided in LDBICT (2012) for 2005 and 2010.

The indicators cover the economic and social context, structure, efficiency and capacity, and performance of the ICT sector in each country. The sector performance is evaluated in terms of access, usage, quality, affordability, trade, and applications.

Economic and Social Context

The population of ASEAN is less than 10% of the world population (Fig. 1). Brunei Darussalam is the least populous country with less than half a million citizens and Indonesia is the most populous member country soon to have more than 240 million citizens. The comparison of the number of citizens in 2005 and 2010 shows that all member countries follow the world tendency of continuous growth of the population. The percentage of urban population also increases in all countries which is a global trend (Fig. 2).

The adult literacy rate gradually improves (Fig. 3), while the gross primary, secondary, and tertiary school enrolment remains almost flat (Fig. 4) with the exception of Indonesia.

The World Bank classifies economies into income groups on the basis of the gross national income (GNI) per capita. Brunei Darussalam and Singapore are in the high-income group (with a GNI per capita ≥ $12,276). Malaysia and Thailand are in the upper-middle-income group (with a GNI per capita greater than $3,975 but less than $12,276). Indonesia, Lao PDR and the Philippines are in the lower-middle-income group (with a GNI per capita greater than $1,005 but less than $3,975). Cambodia and Myanmar are in the low-income group (with a GNI per capita less than $1,005 in 2010). Table 1 shows the income groups. The GNI per capita is shown in Fig. 5.

Updated information about the GNI per capita is available at: <http://data.worldbank.org/indicator/NY.GNP.PCAP.CD>.

While the GNI per capita basically increases in distinct proportions in the individual countries, the comparison of gross domestic product (GDP), 2000-2005 and 2005-2010, shows a typical decline in most countries (Fig. 6). Both the increase of GNI per capita and the decrease of GDP follow the world tendency (Figs. 5-6).

Updated information about the GDP growth can be found as follows:

- Brunei Darussalam, <http://data.worldbank.org/country/brunei-darussalam>;
- Cambodia, <http://www.worldbank.org/en/country/cambodia>;
- Indonesia, <http://www.worldbank.org/en/country/indonesia>;
- Lao PDR, <http://www.worldbank.org/en/country/lao>;
- Malaysia, <www.worldbank.org/en/country/malaysia>;
- Myanmar, <www.worldbank.org/en/country/myanmar>;
- Philippines, <http://www.worldbank.org/en/country/philippines>;
- Singapore, <http://data.worldbank.org/country/singapore>;
- Thailand, <www.worldbank.org/en/country/thailand>; and
- Vietnam, <http://www.worldbank.org/en/country/vietnam>.

Table 1. ASEAN member countries and income groups.

Country	Income group
Brunei Darussalam	High-income group
Cambodia	Low-income group
Indonesia	Lower-middle-income group
Lao PDR	Lower-middle-income group
Malaysia	Upper-middle-income group
Myanmar	Low-income group
Philippines	Lower-middle-income group
Singapore	High-income group
Thailand	Upper-middle-income group
Vietnam	Lower-middle-income group

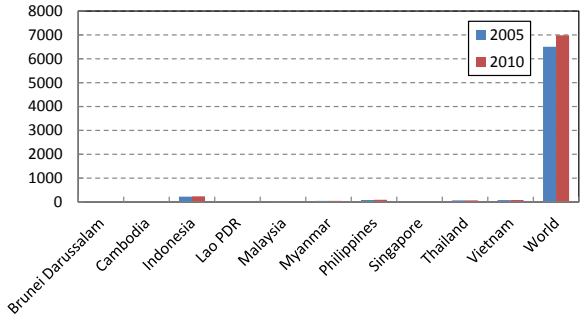


Fig. 1. Population of ASEAN member countries (millions).

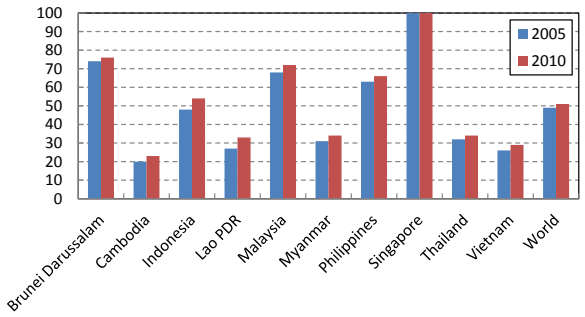


Fig. 2. Urban population of ASEAN member countries (% of total).

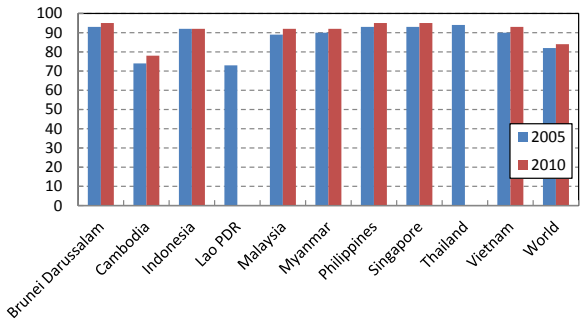


Fig. 3. Adult literacy rate of ASEAN member countries (% ages 15 and older).

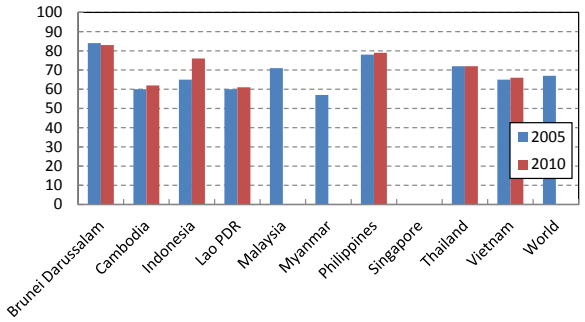


Fig. 4. Gross primary, secondary, and tertiary school enrolment (%) of ASEAN member countries.

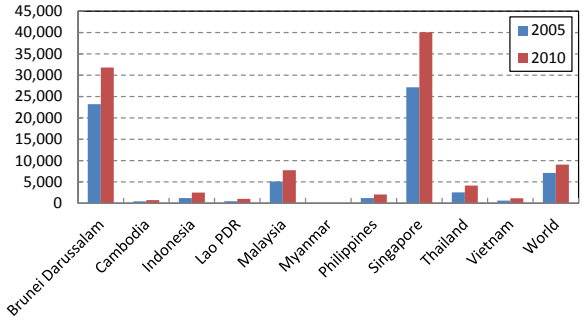


Fig. 5. GNI per capita of ASEAN member countries, World Bank Atlas method ($).

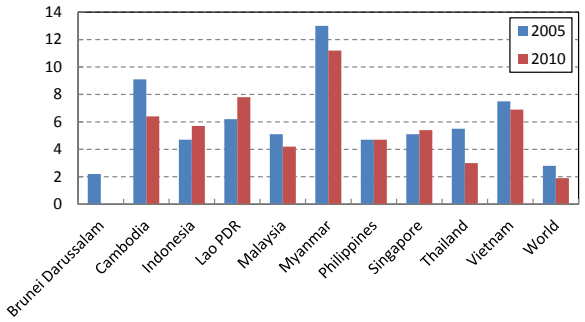


Fig. 6. GDP growth, 2000-2005 and 2005-2010 (avg. annual %) of ASEAN member countries.

Note: Missing columns in some of the figures indicate that the numerical values are not available or cannot be calculated because of missing data.

Structure of the ICT Sector in ASEAN

The development of the ICT sector is significantly affected by the sector structure: telecommunications/ICT regulator; main fixed-line operator; level of competition for international gateway(s), mobile telephone service and Internet service; and regulatory treatment of VoIP (Table 2). It is observed that with the exception of Cambodia, Myanmar and Vietnam, there is a separate telecommunications/ICT regulator. The status of main fixed-line operator is mainly public or mixed. Competition and partial competition dominate but there is still monopoly for particular services in some countries (Table 2). All the previous bans for VoIP are lifted and it is allowed, although it is closed in Myanmar and there is still no framework in Cambodia and Lao PDR.

Table 2. Structure of the ICT Sector in ASEAN.

Sector structure	Separate telecommuni-cations/ICT regulator		Status of main fixed-line operator		Level of competition (Competition, Partial competition, Monopoly)						Regulatory treatment of VoIP (Banned, Closed, No framework, Allowed)	
					International gateway(s)		Mobile telephone service		Internet service			
Country	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010
Brunei Darussalam	Yes	Yes	Public	Public	P	P	M	M	P	P	A	A
Cambodia	No	No	Public	Public	..	P	P	C	P	C	B	No
Indonesia	Yes	Yes	Mixed	Mixed	C	C	C	C	C	C	A	A
Lao PDR	No	Yes	Public	Mixed	M	M	P	P	P	P	B	No
Malaysia	Yes	Yes	Mixed	Mixed	C	C	C	C	C	C	A	A
Myanmar	No	No	Public	Public	M	..	M	M	P	M	C	C
Philippines	Yes	Yes	Private	Private	..	..	C	C	C	C	A	A
Singapore	Yes	Yes	Mixed	Mixed	C	C	C	C	C	C	A	A
Thailand	Yes	Yes	Public	Public	M	C	P	C	C	C	B	A
Vietnam	No	No	Public	Public	C	C	C	C	C	C	C	A

Efficiency and Capacity of the ICT Sector in ASEAN

The telecommunications revenue (% of GDP) and telecommunications investment (% of revenue) are shown in Fig. 7. Reduced telecommunications revenue is the general tendency in the world. However, despite some missing data, it appears that the telecommunications revenue in ASEAN is rather sustained or even increased.

The telecommunications investment was quite noticeable in 2005 in most member countries. The available data also indicate a significant percentage of telecommunications investment in 2010 in Cambodia and Lao PDR.

Performance of the ICT Sector in ASEAN

Access

The fixed-telephone subscriptions, mobile-cellular telephone subscriptions, and fixed (wired)-broadband subscriptions per 100 people are shown in Fig. 8. There is a global tendency for a reduction of the fixed-telephone subscriptions. Nevertheless, the mobile-cellular telephone subscriptions in 2010 remain basically the same in Malaysia and are still on the rise in the most populous member countries: Indonesia, the Philippines and Vietnam (Fig. 8).

The rapid increase of the mobile-cellular telephone subscriptions is observed worldwide and Fig. 8 illustrates this phenomenon for ASEAN which is most spectacular in Vietnam. Third-generation (3G) and fourth-generation (4G) cellular technologies for wireless communications clearly dominate over the standard wired approach.

However, the fixed (wired)-broadband subscriptions are also increasing (Fig. 8) due to the demand for a reliable delivery of real-time video content, images and data. This can be linked to the increase in all member countries of the households with a computer and the households with Internet access at home as shown in Fig. 9.

Usage

Figure 9 also shows the steady increase of individuals using the Internet which can be partially explained with the increase of: the fixed (wired)-broadband subscriptions, the households with a computer, and the households with Internet access at home.

The information about the international voice traffic and the domestic mobile traffic is rather sketchy. The available data are shown in Fig. 10. The wired and wireless media are expected to handle much more intense international and domestic traffic, especially after the planned AEC activation in 2015, for which further improvement is needed.

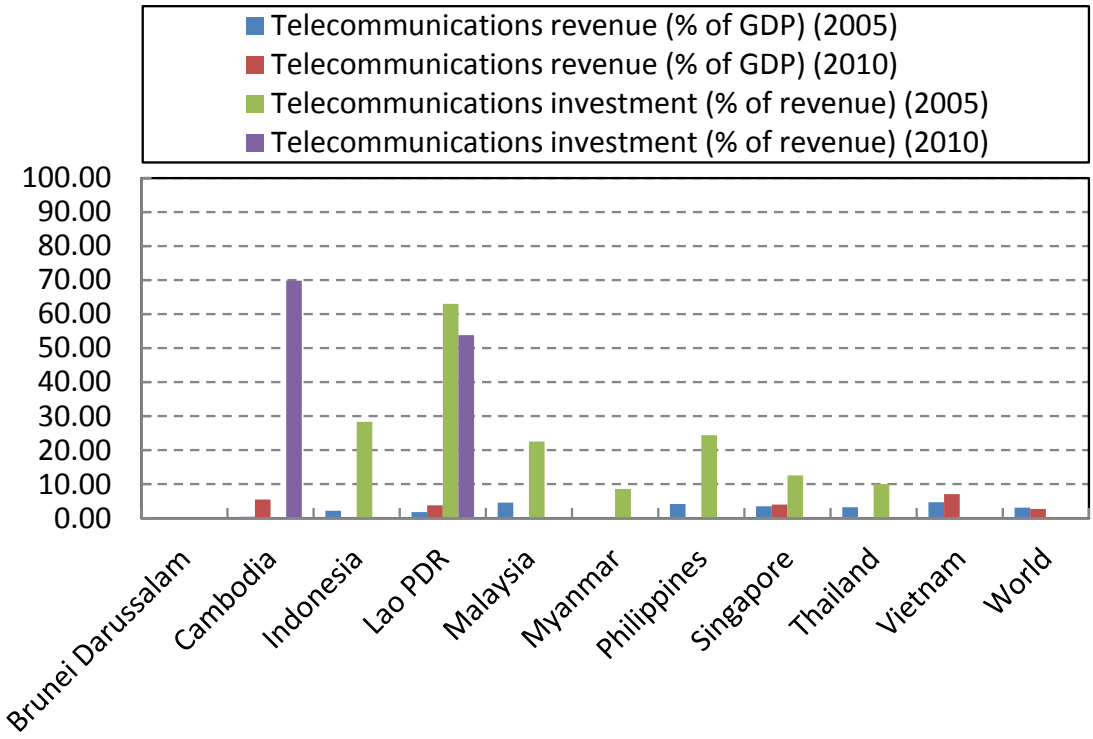


Fig. 7. Sector efficiency and capacity of ASEAN member countries in terms of: telecommunications revenue (% of GDP); and telecommunications investment (% of revenue).

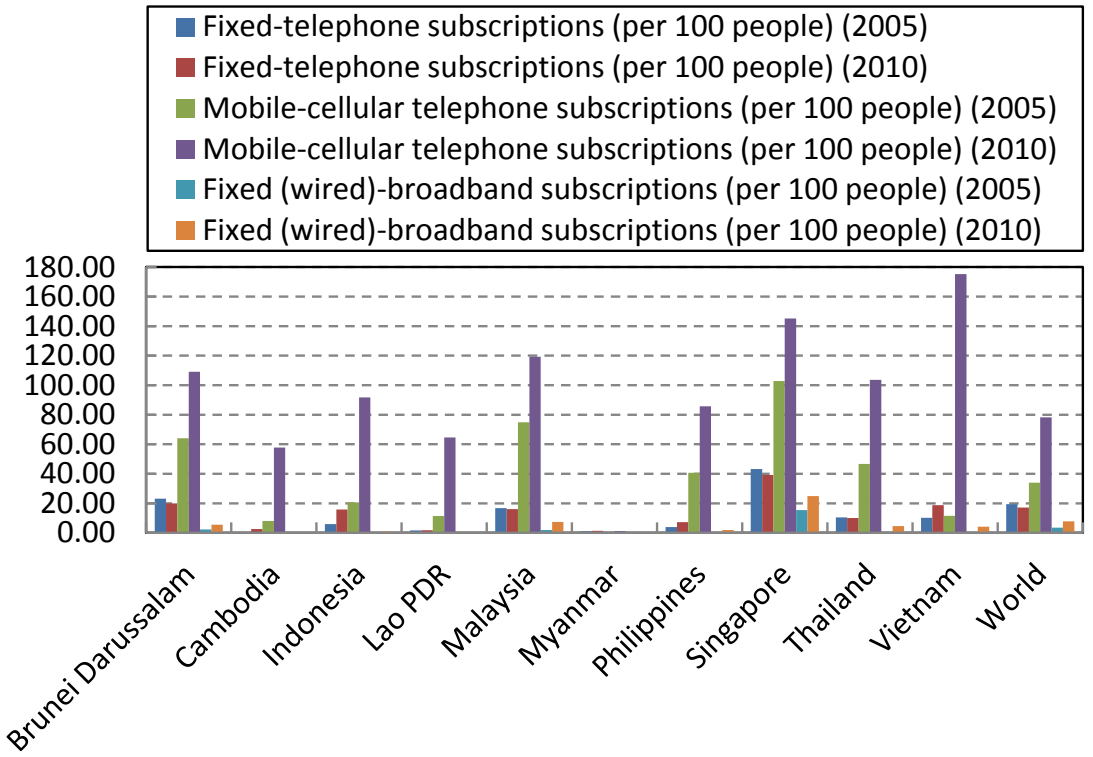


Fig. 8. Access of ASEAN member countries to: fixed-telephone subscriptions (per 100 people); mobile-cellular telephone subscriptions (per 100 people); and fixed (wired)-broadband subscriptions (per 100 people).

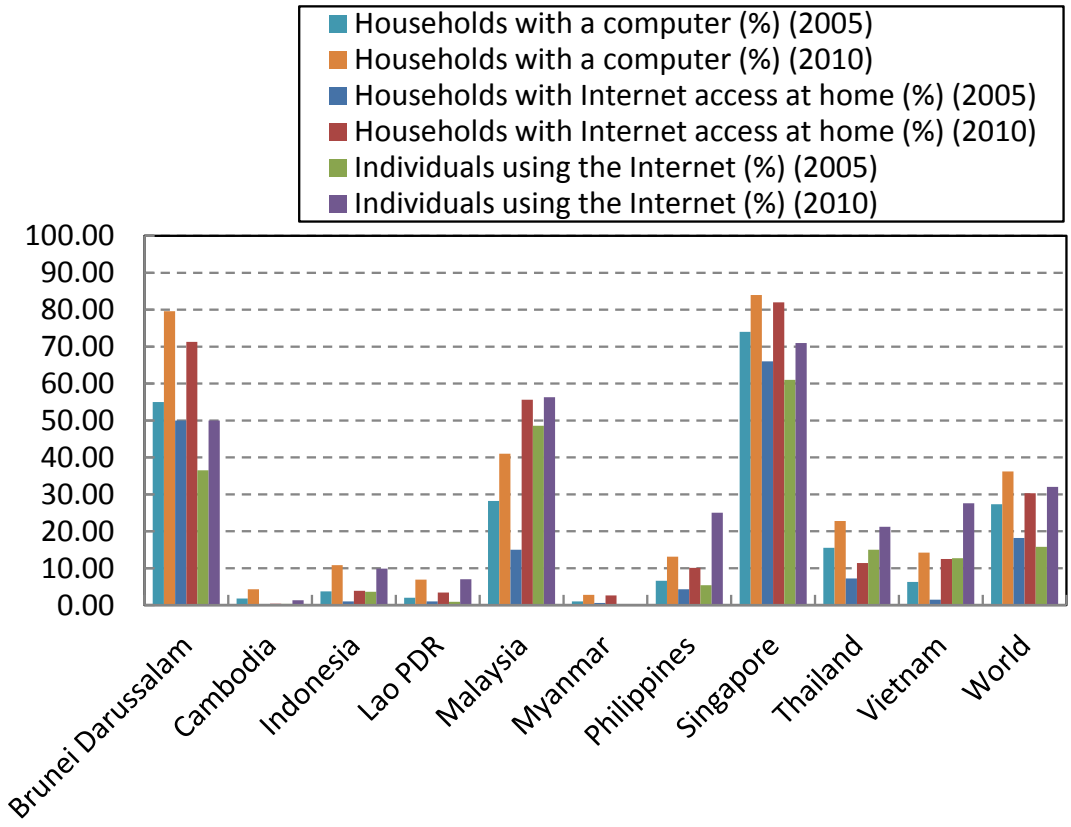


Fig. 9. Households with a computer (%), households with Internet access at home (%), and individuals using the Internet (%) in ASEAN member countries.

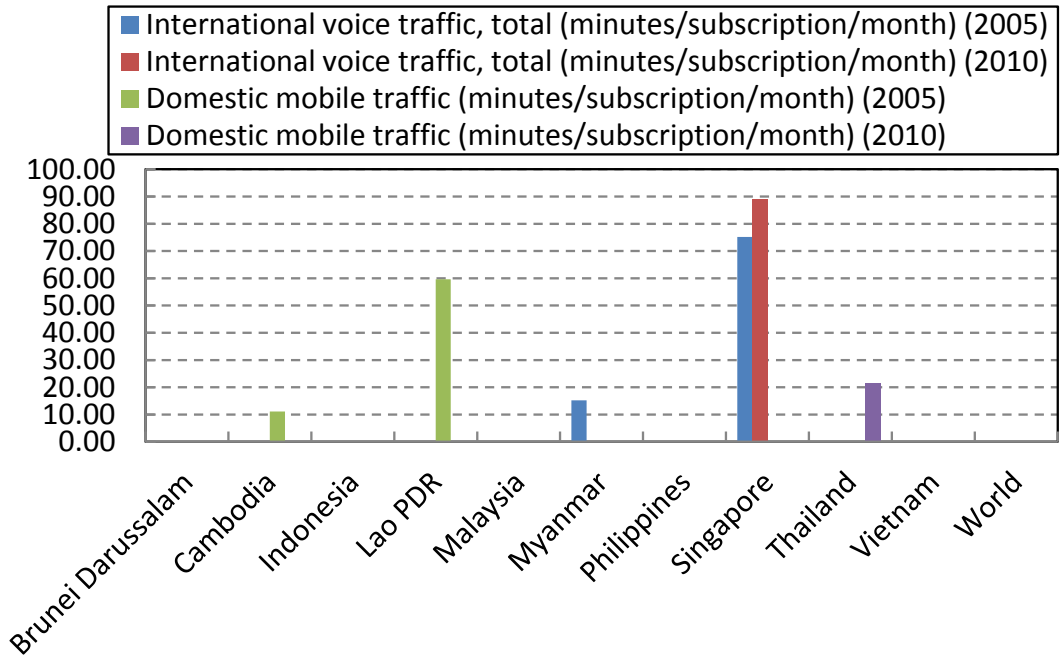


Fig. 10. International voice traffic, total (minutes/subscription/month), and domestic mobile traffic (minutes/subscription/month) in ASEAN member countries.

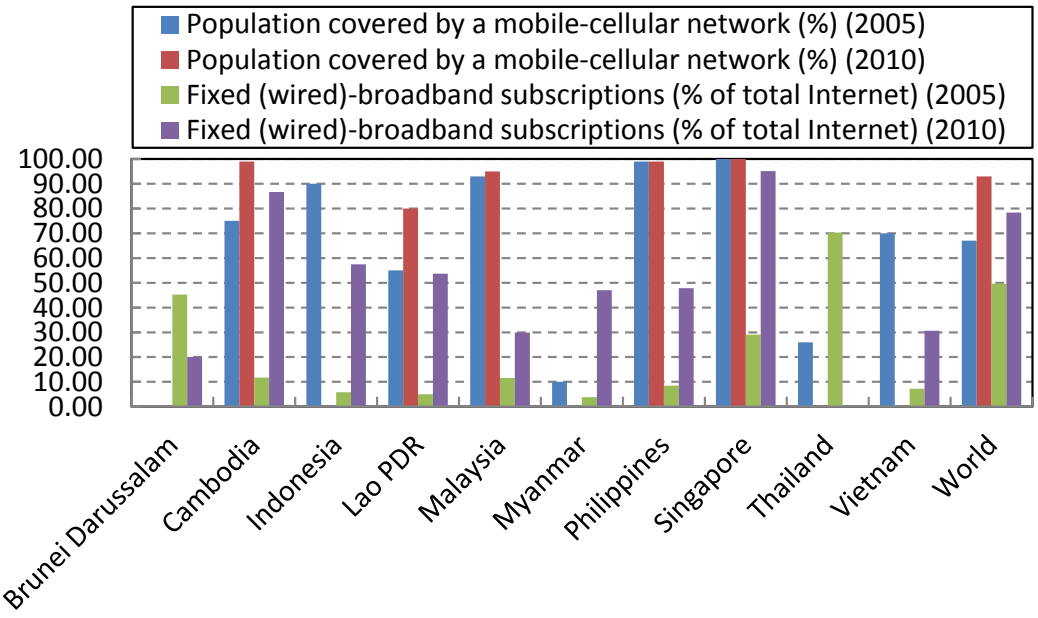


Fig. 11. Population covered by a mobile-cellular network (%) and fixed (wired)-broadband subscriptions (% of total Internet) in ASEAN member countries.

Quality

The quality in the ICT sector is evaluated on the basis of: the population covered by a mobile-cellular network; the fixed (wired)-broadband subscriptions; and the international Internet bandwidth. The percentage of the population covered by a mobile-cellular network is typically greater than 80% and some countries already have complete coverage (Fig. 11). Also, there is a substantial improvement of the percentage of fixed (wired)-broadband subscriptions and this process is far from saturation (Fig. 11). Concerning the international Internet bandwidth, a noticeable problem persists which has to be resolved (Fig. 12).

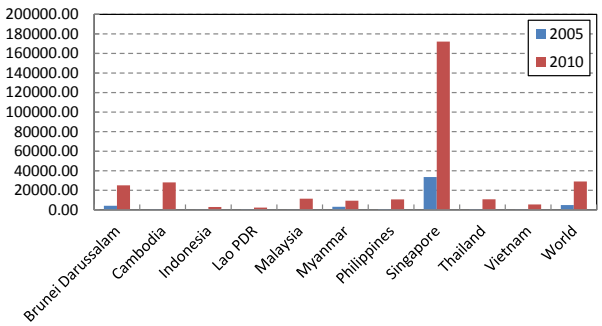


Fig. 12. International Internet bandwidth (bit/s per Internet user) in ASEAN member countries.

The issue with the bandwidth is global, however, the world bandwidth improvement in 2010 is much higher compared to ASEAN. There is one exception as Singapore clearly outperforms the other member countries.

Affordability

The affordability is determined by viewing the available information about: the fixed-telephone sub-basket; the mobile-cellular sub-basket; and the fixed-broadband sub-basket. Figure 13 shows the differences in the amount of money for each sub-basket. The fixed-telephone sub-basket has the lowest amount, the mobile-cellular sub-basket is in the middle, and the fixed-broadband sub-basket has the highest amount. The high price for fixed-broadband service in all member countries follows the world tendency. The maximum amount within ASEAN is in the sub-basket of Lao PDR, followed by Brunei Darussalam and Cambodia.

Trade

The trade in the ICT sector depends on: the ICT goods exports; the ICT goods imports; and the ICT service exports. Figure 14 shows the disturbing reduction of both exports and imports in 2010.

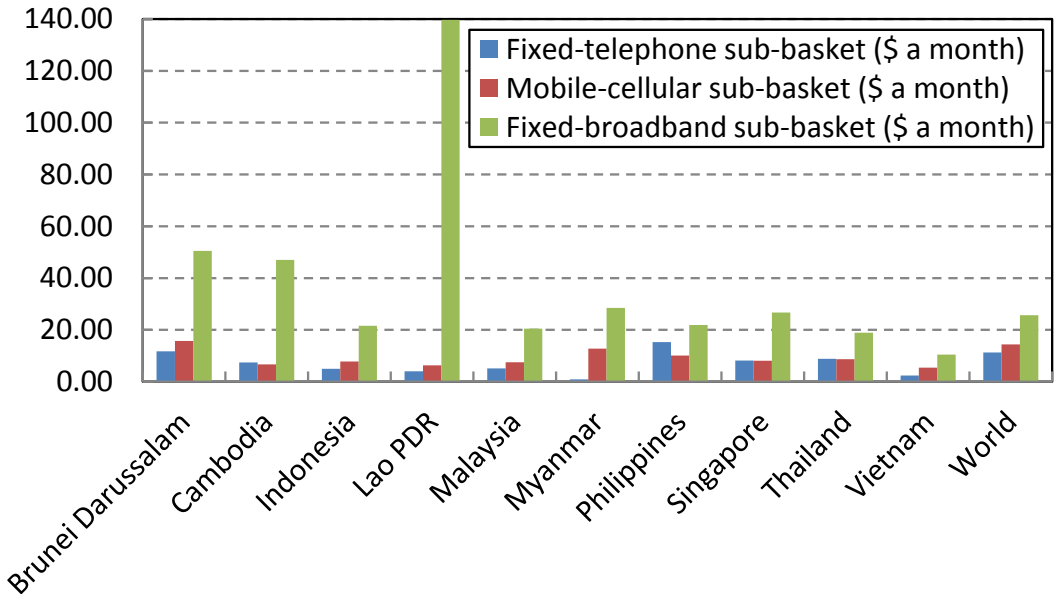


Fig. 13. Fixed-telephone sub-basket ($ a month), mobile-cellular sub-basket ($ a month), and fixed-broadband sub-basket ($ a month) in 2010 in ASEAN member countries.

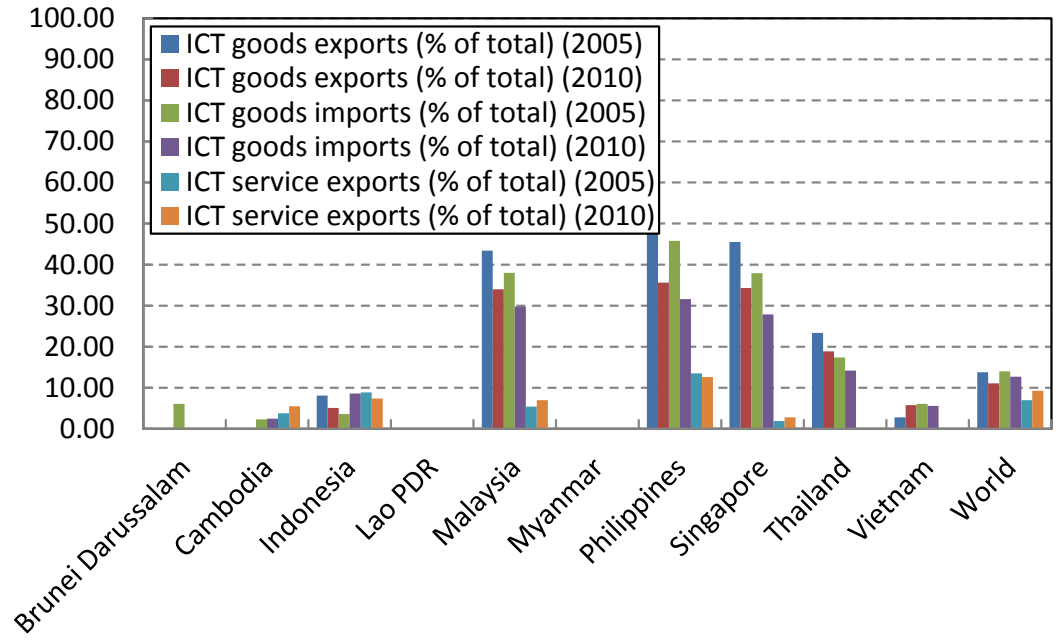


Fig. 14. ICT goods exports (% of total goods exports), ICT goods imports (% of total goods imports), and ICT service exports (% of total service exports) in ASEAN member countries.

Malaysia, the Philippines, Singapore and Thailand maintain a higher percentage of total goods for both imports and exports compared to the world average (Fig. 14). However, the reduction of the percentage in 2010 is higher than the world average which is a sign of economic difficulties in the ICT sector within ASEAN requiring a further analysis which is beyond the scope of this review.

The ICT service exports have ups and downs in 2010 for different member countries (Fig. 14) indicating a lack of stability and the need for better coordination among the participating countries.

Applications

The applications in the ICT sector use as a basis of evaluation the E-government Web measure and the number of secure Internet servers. The E-government Web measure index is shown in Fig. 15. The data shown for 2010 in LDBICT (2012) are for 2012 as provided by the United Nations Department of Economic and Social Affairs (UN DESA) and the United Nations Public Administration Network (UNPAN), available at: <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf>.

As stated in LDBICT (2012), p. 235: "The E-government Web measure index measures the level of sophistication of a government's online presence based on four stages of e-government evolution: emerging presence, enhanced presence, transactional presence, and connected presence. A value of 0 indicates the lowest presence, a value of 1 the highest."

The number of secure Internet servers (Fig. 16) is an indicator of the capability of the member countries to use the Internet not only for simple web browsing but also for a variety of applications which require data protection and privacy. The data shown for 2010 in LDBICT (2012) are for December 2011 as provided by Netcraft, available at: <http://news.netcraft.com/archives/2011/12/09/december-2011-web-server-survey.html>.

For example, the emerging field of cloud computing allows the end users to execute applications, access databases and control hardware in remote Internet locations. This can be done as a service through web browsers over secure connections.

As can be seen in Fig. 16, Singapore has the highest number of secure Internet servers per million people. Having also the highest international Internet bandwidth (Fig. 12), Singapore appears to have the fastest and most secure access to the Internet, followed by Brunei Darussalam, Malaysia and Thailand (Fig. 16). Since the security of the electronic ASEAN (e-ASEAN) is crucial for the proper functioning of the ICT infrastructure, its implementation will likely be pioneered by the said countries and followed by the rest.

In addition, the widespread use of wireless communications such as 3G and 4G cellular networks, WiFi, WiMax, Bluetooth, etc., for smart phones and tablets require innovations in the field of software engineering to boost the insufficient ICT service exports. This can be done with the combined utilization of cloud computing, IPv6 and 4G long-term evolution (LTE) wireless technologies.

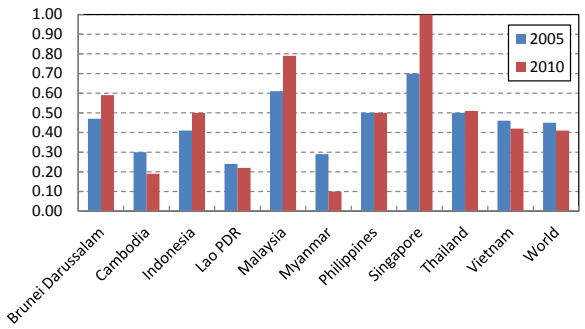


Fig. 15. E-government Web measure index (in the range 0-1, 1 = highest presence) of ASEAN member countries.

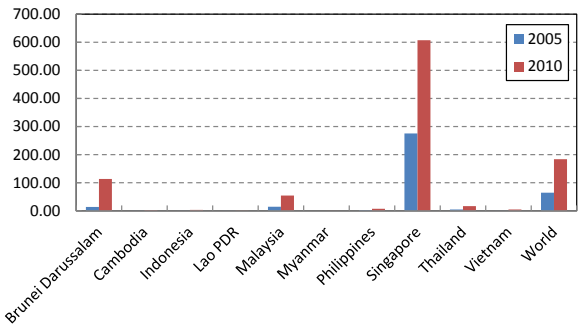
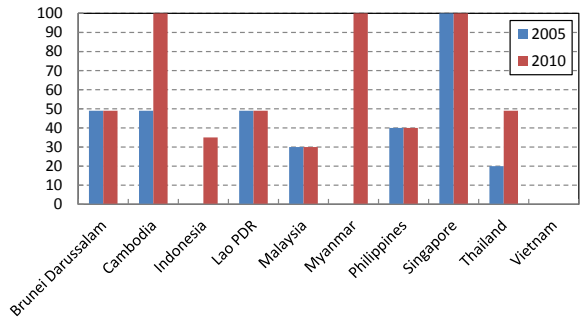


Fig. 16. Secure Internet servers (per million people) in ASEAN member countries.

Irrespective of the proper use of local resources, the structure of the ICT sector always relies on foreign participation. There are different percentages allowed for foreign ownership in ASEAN member countries. It is encouraging to observe that the conditions for foreign investment are improving (Fig. 17).



Note: Cambodia, 49-100% (2005); Lao PDR, 49-100% (2005, 2010).

Fig. 17. Foreign ownership (percentage allowed) in ASEAN member countries.

The motto of ASEAN is "One Vision, One Identity, One Community" which reflects the aspirations of the participating member countries for the activation of one single economic entity. The review of the data provided in LDBICT (2012) follows to the observation that currently ASEAN has better structure, efficiency and capacity of its ICT sector than in the past. The performance of the ICT sector in terms of access, usage, and quality also gains momentum. However, the affordability, trade and applications need improvement. As every member country experiences specific challenges due to the unique conditions in its sectors, including the ICT sector, it seems more plausible that the AEC activation will occur gradually, not all at once, and probably it will continue beyond 2015. This is not an obstacle because unity does not mean uniformity and every member country will have its own path toward integration in AEC.