

**~ Internet is for Everyone ~ Internet is for Everyone- A Basic
Survey of Support for the Pervasion of Internet use in Asian Countries –
September 2000
Japan Network Information Center (JPNIC)**

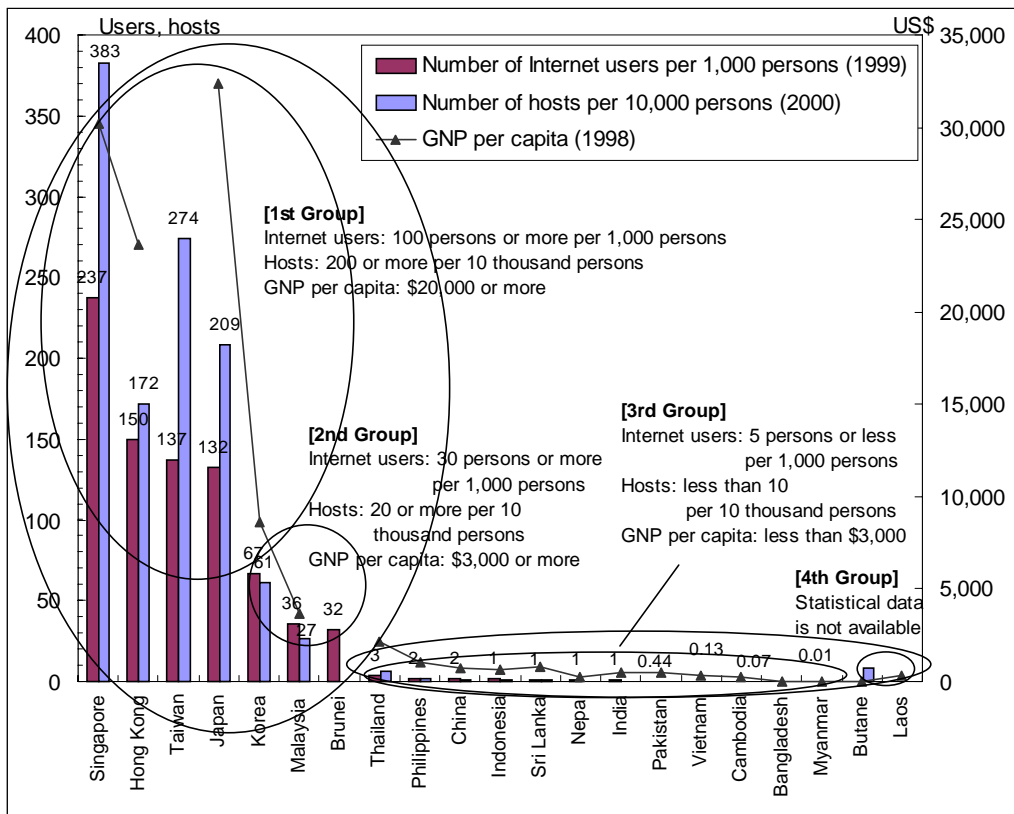
1. Bipolarity of Internet use conditions in Asian countries

- Scale of Internet use is proportional to the size of national economy -

There are two broad groups of Asian countries with regard to the situation in Internet use. For the first group countries the number of Internet users exceeds 100 persons per 1,000 (Singapore, Hong Kong, Taiwan and Japan) or from 30 to 70 persons per 1,000 (South Korea, Malaysia and Brunei). The second group includes countries of 3 persons or less per 1,000. The market is generally bipolar.

- The scales of Internet use are closely proportional to the per capita GNP of the country. For the countries of the first group per capita GNP is \$20 thousand or more, while the same indicator for the second group of countries is \$3 thousand or less.
- It is obvious that the extent of Internet use is closely related to the size of national economy and state of Internet use in Asian countries are widely bipolarial.

Fig. 1 Internet use conditions and GNP of Asian countries

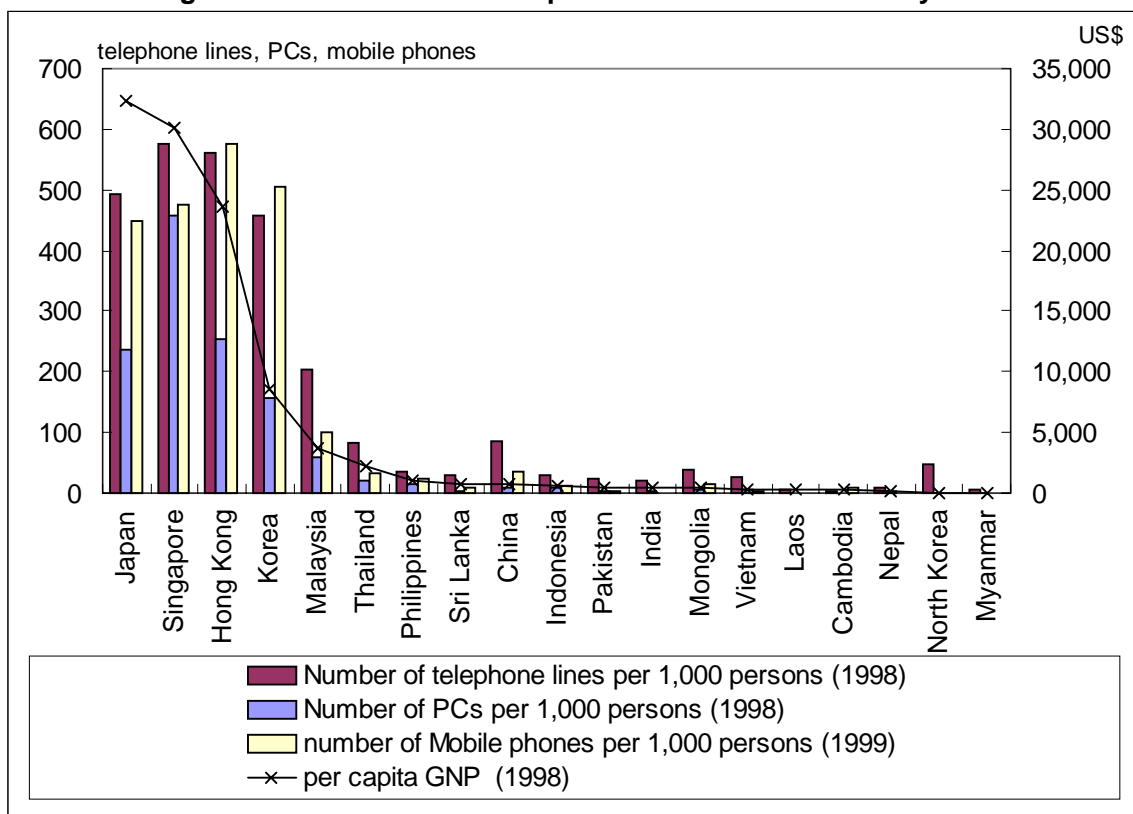


(Sources) Number of Hosts: Network Wizard; *Internet Domain Survey*.
Number of Internet users, per capita GNP: World Bank; *World Development Report 1999/2000*.

2. The availability of the infrastructure for Internet use is also proportional to the size of national economy

- Considering the number of telephone lines, PCs and mobile telephone terminals which can be seen as the infrastructure for Internet use, the availability of the infrastructure is also nearly proportional to per capita GNP or the size of the national economy.
- However, the proportion of the number of telephone lines, PCs and mobile phones to the per capita GNP in Japan is relatively smaller than that in Singapore, Hong Kong and South Korea.

Fig. 2 Infrastructure development and national economy size

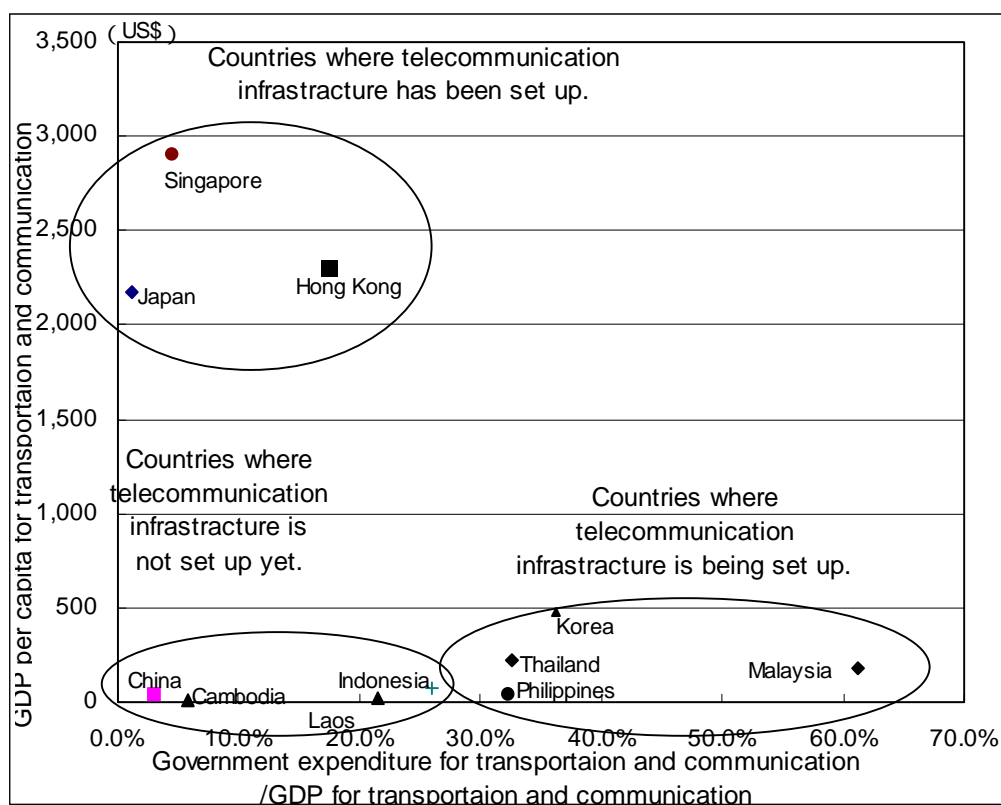


(Sources) per capita GNP: World Bank; *World Development Indicators 2000*

number of telephone lines per 1,000 persons, number of PCs per 1,000 persons, number of mobile phones per 1,000 persons: ITU; *Telecommunication Indicators 1999*

- In order to examine the relationship between the economy size and infrastructure availability conditions of the countries, Fig. 3 shows the relationship between government expenditures and per capita GDP of the transportation and telecommunications industries.
- In Singapore, Japan, and Hong Kong the GDP of the transportation and the telecommunications industries is high, but the government-expenditure-to-GDP ratio is low. Therefore, these countries can be judged as a group of countries where the transportation and telecommunications infrastructure is already well-developed and the leadership of development has transferred to the private sector. This group corresponds to the 1st group of advanced countries of Internet use mentioned in Fig. 1.
- In South Korea, Malaysia, Thailand, and the Philippines, the total amount of GDP for the transportation and telecommunications industries is small, while the proportion of government expenditure compared to the GDP is large. In these countries, it is supposed that the development of the transportation and telecommunications infrastructure is promoted as a governmental issue.
- Countries with small amount of GDP for the transportation and the telecommunications industries and with small proportion of the government expenditure to the GDP are considered as countries where the infrastructure of transportation and telecommunications is still insufficient.

Fig. 3 Relationship between the capital investment to the transportation and telecommunications industries and government expenditure (1998)



(Note) Numbers are of 1997 for Cambodia, 1999 for China, Singapore Pakistan and Nepal.

(Source) ITU; *Telecommunication Indicators 2000*

3. Charges for using

- One of the big problems concerning to the expansion of Internet is the determination of the telephone charge and connection fees considering the income level of each country.

If we take the ratio of Internet connection fee to purchasing power parity of Japan as 100, the same ratio in Singapore (62) is lower than in Japan. But in other countries telephone charge and Internet connection fee are higher than this ratio in the income level of Japan. It is clear that in the low-income countries the ratio of Internet connection fee in the income level is high, therefore Internet connection fee for these countries is expensive.

Compare to the telephone charge in the income level, the ratio of payments on the internet connection fees is larger.

Table 1 Comparison of telephone charges and connection fees of Internet in Asian countries

Country		Local telephone Charge (US\$, 1998)	Internet connection fee (US\$, July 2000)	Ratio of local telephone charge to purchasing power parity (Japan=100)	Ratio of Internet connection fee to purchasing power parity (Japan=100)
High income countries	Japan	0.06	18.7(30 h/m)	100	100
	Singapore	0.04	14.4(35h/m)	62	62
	Hong Kong	0	17.9(no limit)	8	109
	Taiwan	NA	21.8(30h/m)	NA	NA
Middle income countries	Korea	0.03	14.3(no limit)	89	136
	Malaysia	0.02	13.2(no limit)	102	216
	Thailand	0.07	15.2(25h/m)	498	417
	Philippines	NA	18.3(35h/m)	NA	531
Low income countries	Indonesia	0.03	13.4(30h/m)	490	702
	Myanmar	0.16	NA	NA	NA
	Sri Lanka	0.03	56.8(12.5h/m)	401	5,840
	China	0.01	14.5(30h/m)	129	600
	Bangladesh	0.04	58.7(50h/m)	1,118	3,158
	Pakistan	0.03	9.6(25h/m)	714	880
	India	0.02	14.3(25h/m)	382	1,051
	Mongolia	0.01	50(no limit)	269	4,312
	Vietnam	0.1	40(18h/m)	2,328	4,980
	Nepal	0.05	28.4(no limit)	1,665	3,034
	Laos	NA	NA	NA	NA
Cambodia	0.09	NA	2,840	NA	

(Note) Some initial enrollment fees or annual membership fees may be required in addition to telephone charges and Internet connection fees. Internet connection fees shown in this table are for dial up connections.

(Sources) Local telephone Charge: ITU; *World Telecommunication Development Report 1999*, Internet connection fee: Website of local ISPs

4. Liberalization of telecommunications in Asian countries is in progress

<ISP>

- In Asian countries, the relaxation of regulations for participating in the ISP business, that had taken place in the first half of 1998 in Malaysia and in the second half of the same year in Singapore and India. Before the relaxation only a few ISPs were available: 2 companies in Malaysia, 3 companies in Singapore and 1 company in India.
- The regulations still remain in Thailand (liberalizing in October 2000), Nepal and Cambodia. However, it is expected that the liberalization will evolve in Asian countries as a result of the tendency caused by WTO agreements on telecommunications liberalization.
- However, the number of internet users has weak relationship between the number of ISP and regulations. For example, in Singapore restrictions were keeping until the second half of 1998 but the number of users is overwhelming.

<Telecommunications>

- Regulations relative to basic telecommunications operations and ISPs still remain in some developing countries in Asia, where income level is particularly low.

<Others>

- In the countries, which employ communist or socialist policy for communications, government totally controls ministries, agencies and organizations related to the communications (Vietnam, Myanmar, Laos).
- In China, there were no restrictions for newly rising industries such as Internet. But from 1998 control is tightening. However, the government policy is constantly changing before the boom of using Internet.
- There are some countries that have restrictions on connection with Internet for intercepting information about porno, gambling, brutality, etc. These restrictions became normal situation not only in Asian countries but all over the world.

Table 2 Current situation of regulations relative to telecommunications

Country	Regulation for Basic Telecommunication	Regulation for ISP
Singapore	**	***
Hong Kong	**	***
Korea	**	**
Malaysia	*	**
Thailand	*	**
Philippines	*	**
China	*	*
Nepal	*	*
India	*	***
Vietnam	*	*
Cambodia	*	*
Myanmar	*	*
Laos	*	*

***: Liberalization is progressing

**: Regulations still remain (including prospective liberalization)

*: Regulations are very strict

Table 3 Number of ISPs in Asian countries.

Number of ISPs	Country
Over 101	Japan, Hong Kong, Taiwan, Philippines, India
51-100	Korea
11-50	Thailand
Under 10	Singapore, Malaysia, Nepal, Vietnam, Cambodia, Laos

5. Low literacy rates and insufficient environment for using of native language interfere with use of Internet

The displaying of the native language and the provision of environment for input and output are very important points for using Internet.

< Environments for using native language >

- Asian countries have various languages (characters), as shown in Table 2.
- With regard to the character codes, Unicode has been developed as a standard character code supporting languages all over the world by using 16-bit technology, and has been adapted to Windows 2000. It can display 24 languages without installing any special fonts by using its "multi language version". Among this 24 languages the following Asian languages are packaged in Windows 2000. These languages are: Japanese, Chinese (both the complicated character Chinese and the simplified character Chinese) and Korean.

In the case of Internet Explorer, Thai and Vietnamese are supported only for displaying contents, in addition to Japanese, Chinese and Korean.

- As for the current conditions for providing IME products, which are input systems for the respective languages, Malay, Tamil, Hindi and Urdu were already provided in addition to Japanese, Chinese (the complicated character Chinese and the simplified character Chinese), Korean, Thai and Vietnamese.

It is very important issue that preparations are made for the environment to display, input and output native languages, and it is necessary to make efforts continuing the improvement of the environment for Internet use.

< Literacy rate >

As for the literacy rate for women from 15 to 24 years old, it exceeds 10% in 1/3 of all countries in Asia.

From the mentioned above research we can say that provision of environment for using native languages and increasing the literacy rate are very important points for promoting Internet use.

Table 4 Environment for using of native languages

Country	Main language	Windows 2000 (multi-lingual)	Internet Explore 5.1	IME product version	Illiteracy ratio of 15-24 years old (1998)	Secondary school enrollment ratio (1997)
Japan	Japanese	**	**	**	0	103
Hong Kong	Chinese	**	**	**	0	73
Korea	Korea	**	**	**	0	102
Singapore	English	**	**	**	0	74
Philippines	English	**	**	**	1	78
Thailand	Thai		**	**	2	89
Malaysia	Malay			**	3	64
Vietnam	Vietnamese		*	**	3	57
Indonesia	Indonesian			**	4	56
Sri Lanka	Singhalese, Tamil			**(Tamil)	4	75
China	Chinese	**	**	**	5	70
Myanmar	Burma				10	30
Mongolia	Mongolian				28	56
India	Hindi, English, etc.			**(Hindi)	37	49
Laos	Lao				46	29
Pakistan	Urudo			**	53	-
Nepal	Nepalese				61	42
Cambodia	Cambodian				61	24
Taiwan	Chinese	**	**		-	-
Bangladesh	Bengalese				-	-
Butane	Dzongkha				-	-
Brunei	Malay			**		

(Note 1) The version of Internet Explorer is 5.01: ** Supporting contents display, menu and dial box, * supporting only contents display

(Note 2) The percentage of school attendance exceeds 100% due to presence of students who failed examinations, etc.

(Sources) World Bank: *World Development Indicators*

6. Management of Internet resources

This section is based on the international survey conducted by JPNIC International Research Team during June - July 2000. The survey was conducted by sending questionnaires to agencies managing Internet resources in the Asia Pacific region.

JPNIC received replies to the questionnaires from the following countries:

Area	Code	Country
East and south-east Asia	JP	Japan
	CN	China
	HK	Hongkong
	KH	Cambodia
	KR	Korea
	LK	Sri Lanka
	MM	Myanmar
	MN	Mongolia
	MY	Malaysia
	TH	Thailand
	TW	Taiwan
South and middle Asia	MO	Macau
	KZ	Kazakhstan
Pacific Area	TM	Turkmenistan
	NC	New Caledonia
	VU	Vanuatu
	FM	Micronesia, Federal State of
	CK	Cook Islands
	TO	Tonga
	WF	Wallis and Futuna Islands
Swest Asia	SC	Seychelles
	AM	Armenia
	CY	Cyprus
	JO	Jordan
	LB	Lebanon
TR	Turkey	

(1) Juridical personality

As for the juridical personality, many agencies operate as "Nonprofit organizations", except for the Oceanic region.

"Profit making organizations" operate in Mongolia, Vanuatu and the Cook Islands. "State enterprises or parts of government agencies" operate in Sri Lanka, New Caledonia, Micronesia, and Jordan. "Other juridical personality" agencies operate in Cyprus.

Fig. 4 Juridical personality

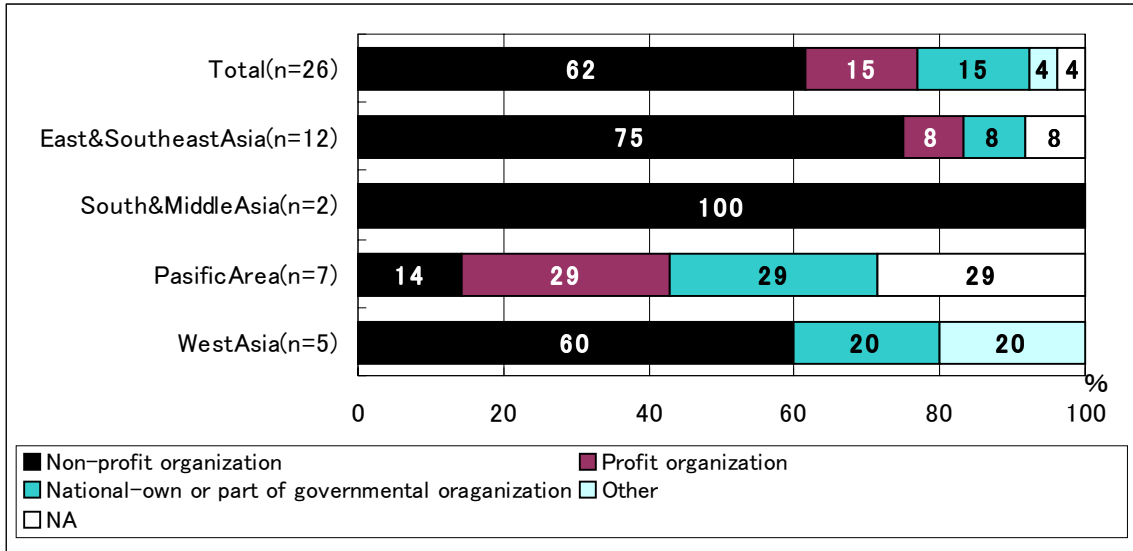


Table 5 Juridical personality by country

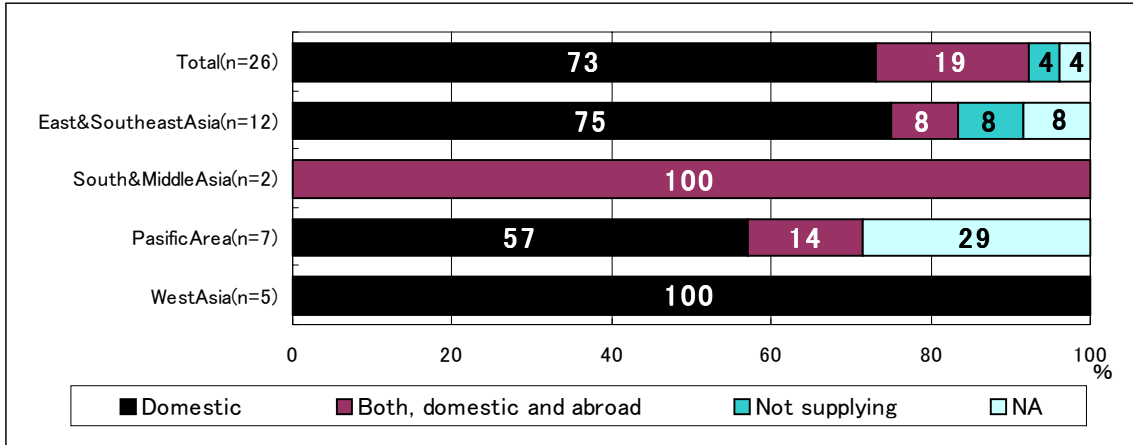
Area	Non-profit organization			Profit organization	National-own or part of governmental organization	Other
	Government-authorized organization	Voluntary organization	Other			
East and south-east Asia	Japan					
	China					
		Hong Kong				
	Cambodia					
	Korea					
					Sri Lanka	
			Myanmar			
				Mongolia		
			Thailand			
	Taiwan					
		Macau				
South and middle Asia			Kazakhstan			
			Turkmenistan			
Pacific area					New Caledonia	
				Vanuatu		
					Micronesia, FS	
				Cook Islands		
	Tonga					
	Wallis and Futuna Islands					
West Asia	Armenia					Cyprus
					Jordan	
			Lebanon			
			Turkey			

(2) Domain registration services

The domain registration is made domestically in many countries except for south and central Asian countries.

Registration is made both at home and abroad in "Mongolia", "Kazakhstan" "Turkmenistan" and "Tonga". Registration is not made in "Myanmar".

Fig. 5 Domain registration services

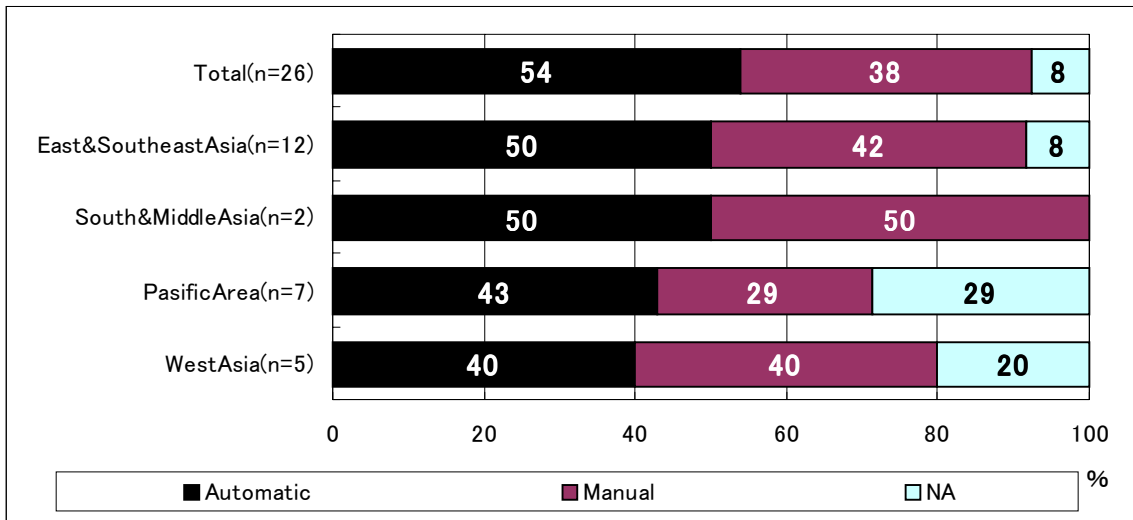


(3) Conditions of automated registration services supply

Automated registration services have not been supplied in "Cambodia", "Sri Lanka", "Myanmar", "Macao", "Turkmenistan", "New Caledonia", "Micronesia", "Armenia" and "Cyprus".

No country pointed out "impossibility of mechanization" as a reason for not supplying an automated registration service. About a half of the above-mentioned countries indicated "shortage of funds" as the reason, while the remaining half indicated "other reasons".

Fig. 6 Conditions of introduction of the automated registration services

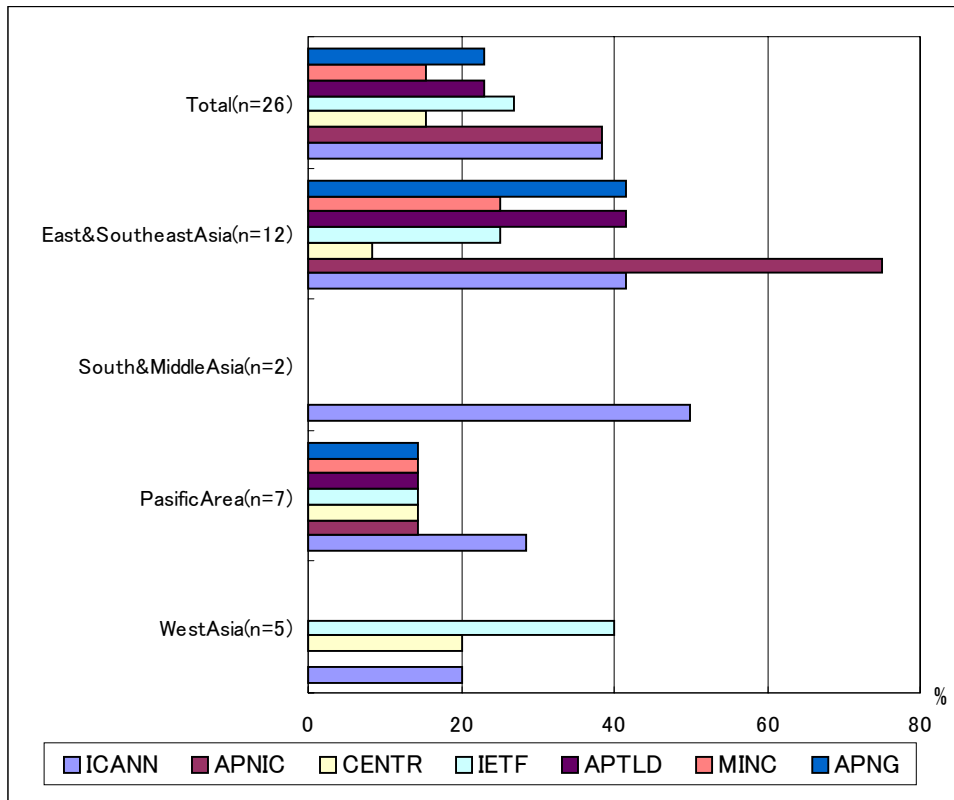


(4) Conditions of attendance at various meetings

East and Southeast Asian countries are aggressively attending various meetings. 70% of these countries attend APNIC in particular.

As a whole, many countries attend ICANN.

Fig. 7 Attendance at various meetings



(5) The number of registered domain names

As for the number of registered domain names in 2000, there is a wide range from countries having less than 100 names to countries having more than 100 thousand names. The differences in the numbers of registered names are very large.

Table 6 The number of registered domain names (2000)

Country	Number of registered domain					
	1995	1996	1997	1998	1999	2000
Korea	579	2,664	8,045	26,166	207,023	440,175
Japan	4,394	14,323	32,052	56,645	115,492	190,709
China			5,100	18,396	48,695	93,472
Wallis and Futuna Islands	650	1,174	3,699	9,863	30,436	60,537
Hong Kong	150	1,500	5,000	10,000	18,000	38,000
Turkey					2,548	5,210
Thailand			558	1,576	2,789	5,008
Micronesia, Federal State				281	2,422	5,000
Taiwan						4,108
Turkmenistan				3,000	3,000	3,000
Mongolia		24	98	250	980	2,700
Cyprus					1,000	2,500
Kazakhstan	15	100	250	500	1,000	1,800
Lebanon	9	102	563	1,210	1,689	1,706
Vanuatu						1,420
Jordan						700
Cook Islands				350	413	606
Sri Lanka						600
Armenia					500	500
Macau				101	212	312
Seychelles				58	60	256
New Caledonia		6	31	112	177	224
Myanmar			5	50	80	50
Cambodia					12	
Malaysia						
Tonga						

As for the average increasing rate of the number of registered domain names, tendencies in the respective regions are almost the same. The highest rate was recorded in 1995 – 1996. The rate increased by nearly double from 1999 to 2000.

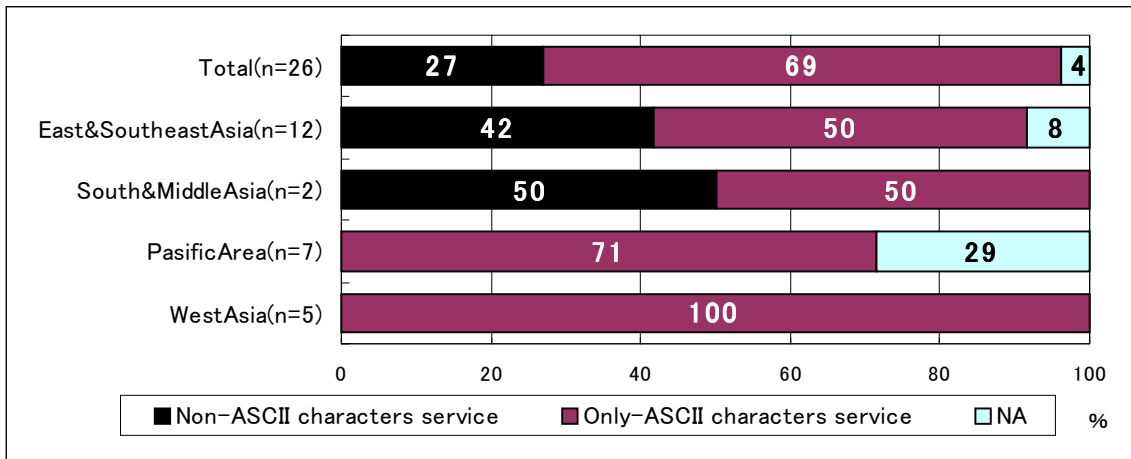
Table 7 Increase of the number of registered domain names

Country	Annual growth			
	1995-96	1996-97	1997-98	1998-99
Korea	4.6	3.0	3.3	7.9
Japan	3.3	2.2	1.8	2.0
China			3.6	2.6
Wallis and Futuna Islands	1.8	3.2	2.7	3.1
Hong Kong	10.0	3.3	2.0	1.8
Thailand			2.8	1.8
Micronesia, Federal State				8.6
Turkmenistan				1.0
Mongolia		4.1	2.6	3.9
Kazakhstan	6.7	2.5	2.0	2.0
Lebanon	11.3	5.5	2.1	1.4
Cook Islands				1.2
Macau				2.1
Seychelles				1.0
New Caledonia		5.2	3.6	1.6
Myanmar			10.0	1.6

(6) Current situation of the support of non-ASCII characters

Registration of non-ASCII characters is done in “China”, “Cambodia”, “Korea”, “Taiwan” and “Turkmenistan”.

Fig. 8 Current situation of the support of non-ASCII characters



7. Problems of Asian countries

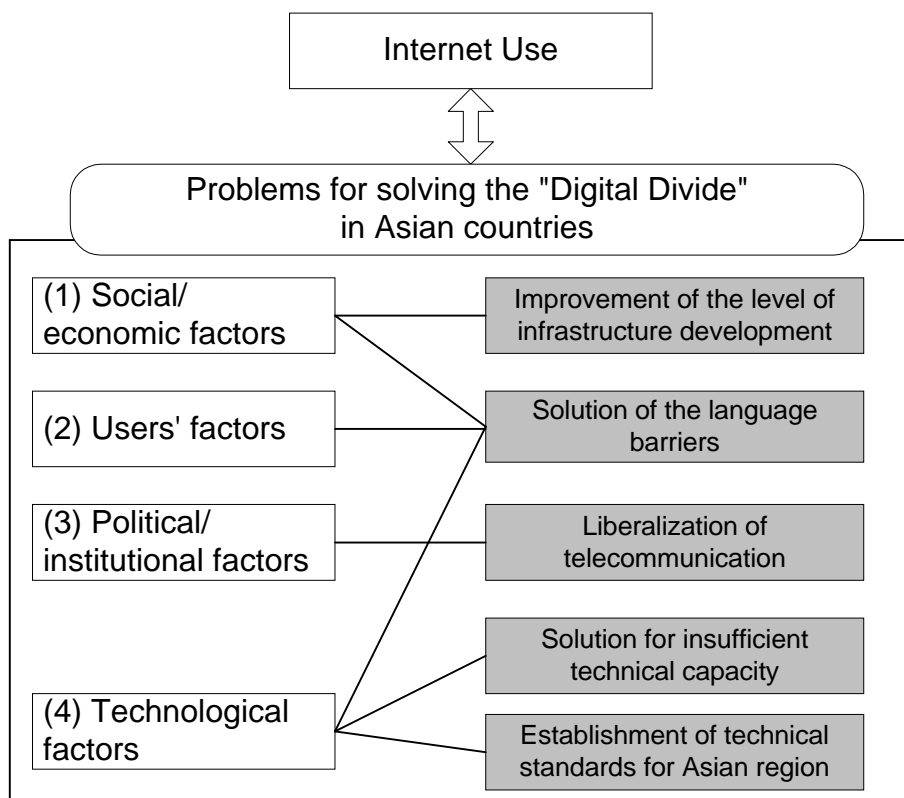
(1) Situation: Bipolarity of Internet use by country

In Asian countries, because of the differences in economy sizes, there is a tendency to bipolarity in the infrastructure availability for Internet use, the number of hosts, the number of users etc. This is completely different from the issue of the “Digital Divide” in the U. S. and Europe, where there is concern that differences between those who are able to connect with Internet and those who are not able to connect is increasing due to race, education, age, etc. In the case of countries having a small investment capability, it is expected that they will not be able to solve the problem by themselves. In other words, this is a kind of “Digital Divide” by country.

(2) Problems for solving the “Digital Divide” in Asian countries

As a result of this research, problems for solving the “Digital Divide” in Asian countries can be summarized into the following 5 points by their respective causes.

Fig. 9 Problems for solving the “Digital Divide” in Asian countries



1) Development of the infrastructure

Promoting the infrastructure development and reducing charges are mandatory issues for promoting Internet use. Many countries cannot domestically promote investments for infrastructure. Therefore, there is a risk that the difference between countries will increase in the future. The appropriate financial and technical support to developing countries must be required for solving the “Digital Divide” issue in the entire Asian region.

Meanwhile, mobile telephone applications can be an effective solution for the Digital Divide issue in Asian countries, since it is not necessary for the user to purchase PCs and the data transfer rate will be improved as a result of development of the next generation mobile telephone systems.

In order to avoid bipolarity by country, it may be required to establish “Asian Tier 1” for Asian enterprises through the cooperation of ISPs in Asian countries.

2) Language barriers

As for the reasons of the users problems, we can point out that various barriers are caused by the fact that English is not used in the counties. In the case when functions for supporting or translating their own characters are not packaged in the OS of PCs or Internet browsers, all Asian countries should jointly request the manufacturers to support their country’s characters.

Meanwhile, the multi language domain, for instance, attracts public attention as a solution to reduce these language barriers. But with the improvement of capacity for the using of native languages, it becomes difficult for the foreign users to use them. And there is a possibility that a new divide issue will appear. This issue is the isolation from the world (or the English speaking world). It is necessary to study carefully the balance between considerations towards the national user and providing an environment for smooth transmission and reception of information with countries all over the world.

3) Liberalization of telecommunications

In Asian countries, many governments regulate the use of Internet. Some actions for liberalizing telecommunications are urgently required.

4) Insufficient technical capability

As telecommunications networks are constructed, shortages of funds for installing servers and engineers, capable to operate, and maintain these servers become outstanding. As infrastructures relative to Internet are constructed all over the world, many engineers in Asian countries, who aim for higher incomes, tend to move to the developed markets such as the USA, causing the shortage of capable engineers in the Asian region becomes more serious.

The respective countries are making efforts to develop capable engineers. However, the

number of higher education institutes and teachers is still overwhelmingly short in many countries, and support from the developed countries such as Japan and Singapore is required.

5) Necessity of cooperation among Asian countries for establishing technical standards

There is a tendency to international standardization concerning to technologies relative to Internet, technologies of the USA, Europe and other developed countries. But in this case, Asian countries must pay the expensive license fee to the American or European companies. It may adversely affect to their construction of the relevant infrastructure etc.

The preparing of rules for managing Internet resources is also led by the USA and Europe and other developed countries, since the discussion itself is made in English.

In the future, it is necessary to create Internet environment desirable for Asian countries through cooperation with in Asian region through the preference of Internet technology (including the next generation mobile telephone technology, etc.) being adopted as the standards for the Asian region. As for rules of Internet use, it is also important for Asian countries to present their own opinions for developing more convenient environment.