Factors Affecting Internet Development: An Asian Survey

By Hao Xiaoming and Chow Seet Kay

This study examined the relationship between the Internet development and various social, economic and political factors that are hypothesized to affect the Internet growth. Using secondary data for 28 sampled Asian countries, this study tested seven hypotheses about the impact of various factors on Internet growth. The findings show that the Internet penetration is related to a country’s wealth, telecommunication infrastructure, urbanization and stability of the government, but not related to the literacy level, political freedom and English proficiency.

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Abstract
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Introduction

Today, the Internet is increasingly making its presence felt, not only playing an important role in research and education but also serving as a catalyst to a country’s socio-economic, cultural and political development. It is therefore not a surprise that the Internet has become a development of the highest significance.

The importance we attach to Internet development has naturally led us to notice widening gaps in technology between industrialized and developing nations, exacerbating an already significant moral and practical problem (Press, 2000). The uneven adoption of modern information communication technologies (ICT) will further widen the division of "the information rich and information poor."

While the industrialized nations are pressing ahead with the Internet development, some of the less fortunate countries have yet to taste the fruits of this new technological invention. This is especially true for many Asian countries where "universal access to basic communication and information services still remains a distant dream" [1]. The diversity in the economic development of Asia is reflected by the uneven development of the Internet in Asia, where the Internet penetration rate ranges from 0 percent to 64 percent in 2002 [2].

In the rich part of Asia, flexible and low-cost communication provided by the Internet led to further improvements in productivity, business, education, health care, entertainment, global awareness, and quality of life. On the other hand, poorer countries are facing many problems in developing their telecommunication systems. ISPs are usually accessible in industrial and business locations or urbanized areas but their extension to rural areas and remote places is costly and tedious, thus limiting access for poorer and under-privileged citizens to new knowledge resources.

In addition to the lack of financial backing and technological support, Internet development in Asia is also handicapped by political concerns and worries about national security, social order and international relations. The diversity in language, low literacy rate and other cultural factors may also affect Internet development in Asia.

Compared with the West, Asia had a slow start in Internet development. In the mid-1990s, over 90 percent of Internet hosts were found in North America and western Europe while Asia had only a share of three percent of global Internet hosts (Lottor, 1995). In 2001, however, Asia’s 144 million Internet users are not too far behind the 180 million users in North America and 155 million users in Western Europe, although proportionally the number of Asian Internet users is still way behind that of North America or western Europe (NUA Internet Survey, 2001).
Asia has indeed come a long way in terms of the Internet in the past ten years. After a slow start, Asia saw its average Internet penetration rate up from a mere 0.46 in 1995 to 3.7 in 1998, 8.8 in 2000 and 12.5 in 2002 [3]. It has been a marked achievement in just seven years. However, the growth is not evenly spread among all Asian countries. Fast Internet growth has been achieved only in the more developed countries such as Hong Kong, Singapore, Taiwan, South Korea and Japan.

Asia will continue to race ahead, embracing and exploiting the Internet and the long–term commercial opportunities provided by it. However, the impact of the Internet is going to differ from one country to another as the deployment of this communication technology varies accordingly in different societies.

The digital divide boosted by contemporary communication technologies (primarily by the Internet revolution) is fast raising concerns among nations in the developing world as it allows some individuals or nations to benefit more from the use of such technologies than others. As a result, efforts are being made by some of the poorer countries to catch up with technology by pumping resources into communication hardware and software. However, these efforts so far have not achieved much in bridging the gaps in ICT development among various Asian countries.

There is a real danger that the global information society will remain global in name only if no assistance is rendered to poorer countries. While financial assistance is important to Internet growth, it may not be the sole factor that determines ICT development in a country. Therefore, it is important for us to understand what other factors may facilitate Internet development. With a better understanding of the various factors affecting Internet diffusion, it is hoped that developing countries will better target their efforts in reducing the digital divide and make the Internet a truly global information network.

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**Literature review**

The diffusion of innovation theory holds that a new idea — or a communication idea — begins at its point of origin and spreads through the surrounding geographic areas or from person to person within a specific area (Littlejohn, 1996). According to this theory, once a certain number of individuals (perhaps 15 percent) in a system adopt an innovation, it will continue to spread in a self–sustaining process. Messages disseminated through personal interaction will achieve a greater level of understanding than if the same messages are passed through media channels only. The interpersonal interaction component is deemed to be essential to convergence or shared meaning of the message (Littlejohn, 1996).
Amendola and Gafford (1988) compared the process of innovation with the diffusion of innovation as the extent and the speed at which the economy proceeds to adopt a new invention. The concern is on how the economy adjusts to or "diffuses" a new technology. This adjustment or diffusion can be instantaneous or gradual.

Amendola and Gaffard (1988) noted that a "new," expanded interpretation of the process of innovation has emerged. Less emphasis is on the actual absorption of a given technology, and more importance is placed on the actual process through which a new technology is developed step by step. To a great extent, the snowball effect is visible in the diffusion of the Internet; by reaching its critical mass point, it allows the Web to take off at a considerable accelerating rate (Chen and Crowston, 2001).

According to Rogers (1983), innovators or the "venturesome" are people who are eager in launching the new idea in the social system by importing the innovation from outside of the system’s boundaries. Thus, the innovator plays a gatekeeper role in the flow of new ideas into a social system. As for early adopters, they are a more integrated part of the local social system than are innovators.

Innovators and early adopters of a technology are important to the diffusion of any innovation (Rogers, 1995). These individuals (or organizations or countries) are among the first to try out an innovation. They have a high degree of innovativeness, which is the degree to which an individual or other unit of adoption is faster in adopting new ideas than other members of a social system (William et al., 1988).

Rogers (1995) believes that the rapid evolution of the Internet presents a unique opportunity to revisit theories about the diffusion of innovations. The Internet differs from previous innovations in that it is an extraordinarily dynamic innovation; its recently developed capabilities include animation and extended interactivity (e.g. Java applets). This phenomenon demonstrates how a dynamic technology such as the Internet may adapt to areas beyond those originally intended (Chen and Crowston, 2001).

Chen and Crowston (2001) noted that adoption and implementation of the Internet take place on at least two levels — organizational and individual. An organization may implement Web browsers throughout the organization, but individuals may not choose to use the technology. The opposite is also true. This brings attention to cases where organizations with existing computer communications systems may find the Internet to be an incremental innovation. Others may find the Internet to be a radical innovation, which, for example, introduces e-mail and changes the organization’s communication channels.

Chen and Crowston (2001) also noted another dimension to communication technology innovations. Due to its complex nature, the Internet has been affected by both technology
push and business pull. The technology push came first. The technical development of the Internet has made the innovation accessible to a much wider circle of organizations and people. Once that accessibility was achieved, the technology began to diffuse with increasing rapidity. This sort of technology push seems to have now been followed by a business pull, as businesses race to establish a marketing presence on the Web.

Bazar and Boalch (1997) identified several factors pertinent to the diffusion of the Internet in developing countries, including the infrastructure, government policies and regulations, economic development, culture, language and IT penetration. Norris (2003) found that the faster an economy developed, the stronger Internet growth was achieved in given country. There is also a revealing trend that higher income groups tend to have greater access to the Internet and the number of Web hosts in that country tends to be congruent with individual income.

In another study, Rogers (2000) noted that the Internet has mainly diffused in urban areas among the comparatively wealthy and educated. He noted that much of the infrastructure needed for the rapid diffusion of the Internet is not found in the rural areas in India. Many villages in India do not have central electricity or telephone service and no one in these rural areas can afford to own a computer.

Moffett (1997) found that an inadequate telecommunication infrastructure is a major obstacle in the way of Internet development in Central Asia. There are not enough telephone lines in the main cities of Kazakhstan, Uzbekistan, Tajikistan and Turkmenistan. Insufficient links with the rural areas also impede the Internet diffusion in Central Asia.

Uimonen (1999) agreed that adequate infrastructure is crucial to Internet growth. In the case of Laos, which was one of the last countries in Asia to establish Internet connectivity, the slow development of the Internet is explained by the low levels of personal computer penetration and a poor telecommunications network coupled with lack of awareness among users, developers and decision makers.

Devraj (2000) described the already big gulf between the industrialized and developing nations. The Internet is very much a big-city phenomenon and only a handful of South Asians can actually take advantage of the region’s much-acclaimed IT achievements. Even literate South Asians cannot benefit from the IT revolution without a working knowledge of the English language because of poor "localization" — a highly technical process by which computer programs are translated into another language.

In its efforts to help developing nations cope with contemporary communication technology, the United States Agency for International Development (2001) adopted the three "P" approach to support Internet development across Asia and the near East: (1) Policy — reduce barriers to open connectivity, (2) Private Sector — ensuring there are
Factors affecting Internet development

In general, the diffusion of innovation theory was widely applied in past research on the adoption of Internet technology in a society. Many studies noted that Internet growth could be affected by various factors, including economic development, IT infrastructure, government and business policies, and the degree of urbanization. Such findings, however, tend to be based on qualitative analysis and personal observations of individual societies. Few systematic studies have been carried out to compare the Internet development experiences of different countries to test the validity of such claims.

Hypotheses

Lerner (1958) believed that the West modernized and progressed through the rapid implementation of urbanization strategies. This had led to increased literacy and mass media exposure, which contributed to higher incomes. An UNESCO study found that indicators of national development, such as per capita income, literacy and urbanization, correlate with indicators of a well-developed media infrastructure. Therefore, we hypothesized:

**H1:** The higher a country’s GDP per capita, the more likely that it has a higher Internet penetration.

**H2:** The higher the literacy rate of a country’s population, the higher the diffusion rate of the Internet.

**H3:** Greater urban population tends to associate with faster Internet growth.

Vehovar et al. (1999) suggested that language plays an important role in influencing Internet usage. Since the Internet is dominated by English language content, some countries, where English is widely spoken, have a strategic advantage in popularizing the use of the Internet. Therefore, we hypothesized:

**H4:** The higher the English proficiency in a country, the higher the Internet penetration in that country.
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A study investigating the major obstacles in improving Internet connectivity in Central Asia indicated that poor telecommunication infrastructure was the major reason for the slow spread of the Internet (Moffett, 1997). To test this assumption, we hypothesized:

**H5:** A well-established telecommunication infrastructure in a country tends to associate with a high dispersion rate of the Internet.

Past studies (Du, 1999; Euromonitor International, 2003; Goonasekera, 2001) show that development of the Internet tends to face resistance in countries with strong political controls as the government is more likely to see the Internet as a threat to its political control. To test if there is really a relationship between political freedom and the Internet growth, we hypothesized:

**H6:** Greater political freedom promotes faster Internet growth.

Because the deployment of communication technologies tends to lead to long-term achievements rather than short-term gains, countries that see too many political upheavals are events that make it unlikely for a ruling government to invest money and time in developing the Internet, as each government is more interested in showing immediate benefits to its citizens. Based on such an assumption, we drew the following hypothesis:

**H7:** Political stability in a country tends to promote faster Internet development.

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**Methodology**

This study was primarily a secondary analysis of existing data, which were obtained from different sources, including the *International Marketing Data and Statistics 2003* published by Euromonitor International, the *TOEFL Test and Score Data Summary* — 1998–99 edition, Freedom House’s *Freedom in the World 2000–2001* survey, the World Bank and *The World Factbook 2002*.

A stratified sample of 28 Asian countries was selected to represent various parts of Asia in terms of country size, socio-economic development, political system, literacy rate, degree of urbanization, telecommunication infrastructure and geographic location. These countries include:

East Asia: China, Hong Kong, Japan, Mongolia, Macau, South Korea, Taiwan;
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South East Asia: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam;

South Asia: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka; and,

Central Asia: Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan.

The dependent variable — the Internet penetration — covers four different periods, which reflect the various stages of the Internet development in Asia. Specifically, these four periods are:

1995 — which marks the start of the Internet in most Asian countries;

1998 — which witnessed slow growth in many Asia societies;

2000 — which began to see the momentum in the Asian Internet growth;

2002 — when the snowball effect became highly visible in the diffusion of the Internet in Asia.

The independent variables include GDP per capita, adult literacy, proficiency in English, telecommunication infrastructure, proportion of urban population, political freedom, and political stability.

Findings

Statistics on Internet penetration in the sampled countries show that Asia had a very slow start in Internet development. In 1995, only five of the sampled countries had an Internet penetration rate above one percent, with Singapore leading with a rate of less than four percent. About half of the countries had no Internet service at all.

Much progress has been achieved since the year 2000. In 2002, all the sampled countries except Myanmar obtained public access to the Internet. However, huge gaps exist among these countries in Internet penetration. Although the Internet reached more than half of the population in Hong Kong (64.1 percent), Singapore (55.6 percent) and South Korea (52.7 percent) and close to half of the population in Taiwan (49.8 percent) and Japan (48
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percent), less than one percent of the population in half of the sampled countries had access to the Internet. Even in the fast growing economies such as China and India, the Internet penetration rate was only 3.5 percent and 0.7 percent respectively. Please see Table 1 for details.

Table 1: Internet penetration rates (percent) in sampled Asian countries.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Bhutan</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Brunei Darussal</td>
<td>1.03</td>
<td>6.41</td>
<td>9.23</td>
<td>9.9</td>
</tr>
<tr>
<td>Cambodia</td>
<td>0</td>
<td>0.02</td>
<td>0.05</td>
<td>0.1</td>
</tr>
<tr>
<td>China</td>
<td>0</td>
<td>0.17</td>
<td>1.76</td>
<td>3.5</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>3.28</td>
<td>14.36</td>
<td>49</td>
<td>64.1</td>
</tr>
<tr>
<td>India</td>
<td>0.03</td>
<td>0.14</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.03</td>
<td>0.25</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Japan</td>
<td>1.59</td>
<td>13.39</td>
<td>37</td>
<td>48</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>0.01</td>
<td>0.12</td>
<td>0.6</td>
<td>0.7</td>
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<tr>
<td>Korea, South</td>
<td>0.81</td>
<td>6.68</td>
<td>40.26</td>
<td>52.7</td>
</tr>
<tr>
<td>Laos</td>
<td>0</td>
<td>0.01</td>
<td>0.11</td>
<td>0.2</td>
</tr>
<tr>
<td>Macau</td>
<td>0.28</td>
<td>6.61</td>
<td>12.74</td>
<td>23</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.2</td>
<td>7</td>
<td>16.59</td>
<td>24.4</td>
</tr>
<tr>
<td>Maldives</td>
<td>0</td>
<td>0.6</td>
<td>2.13</td>
<td>3.6</td>
</tr>
<tr>
<td>Mongolia</td>
<td>0.008</td>
<td>0.13</td>
<td>1.14</td>
<td>1.6</td>
</tr>
<tr>
<td>Myanmar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nepal</td>
<td>0</td>
<td>0.07</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0</td>
<td>0.04</td>
<td>0.09</td>
<td>0.3</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.03</td>
<td>0.21</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Factors affecting Internet development

To test the relationship between the Internet penetration and various factors that may affect the Internet development, correlation analysis was conducted using the Pearson correlation coefficients. The results are presented in Table 2.

Table 2: Correlation between Internet Penetration and Various Factors.

* Correlation is significant at the .05 level (2–tailed).
** Correlation is significant at the .01 level (2–tailed).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Rate 1995</th>
<th>Rate 1998</th>
<th>Rate 2000</th>
<th>Rate 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>.86**</td>
<td>.91**</td>
<td>.92**</td>
<td>.92**</td>
</tr>
<tr>
<td>Literacy</td>
<td>.36</td>
<td>.40</td>
<td>.45*</td>
<td>.45*</td>
</tr>
<tr>
<td>Urbanization</td>
<td>.74**</td>
<td>.81**</td>
<td>.82**</td>
<td>.83**</td>
</tr>
<tr>
<td>English level</td>
<td>.19</td>
<td>.17</td>
<td>-.02</td>
<td>-.13</td>
</tr>
<tr>
<td>Telecom</td>
<td>.84**</td>
<td>.93**</td>
<td>.95**</td>
<td>.97**</td>
</tr>
<tr>
<td>Political freedom</td>
<td>-.15</td>
<td>-.22</td>
<td>-.38</td>
<td>-.38</td>
</tr>
<tr>
<td>Political stability</td>
<td>.63**</td>
<td>.64**</td>
<td>.62**</td>
<td>.61**</td>
</tr>
</tbody>
</table>

The results show a strong relationship between a country’s GDP and Internet penetration consistently over the four periods. Rich countries tend to boast a higher Internet
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penetration rate than poor countries. Countries with advanced economies, such as Hong Kong, Singapore, South Korea, Taiwan and Japan, lead Asia in Internet development. Those countries which are not so rich but relatively well–off, such as Malaysia, Macau, Brunei and Thailand, also fared better than those poorer countries. On the other hand, countries with low GDP per capita, such as Myanmar, Bangladesh, Bhutan and Cambodia, are all on the low end of the Internet penetration rate. In general, Hypothesis 1, which predicts that the higher a country’s GDP per capita, the more likely that it has a high Internet penetration, is supported.

It should be noted that the advantage of a strong economy only works when it can break down into per capita wealth. Big economies with poor individual income, such as China and India, offer no advantage in popularizing the Internet over small economies with bigger per capita share, such as Singapore and Hong Kong.

The Internet is perceived as a tool for learning, and its users also tend to be those with better education, but the literacy level of a country is found to be not a very important factor in predicting a country’s Internet development. Our basic data show that Asia is quite unevenly developed in terms of providing basic education to its people. The literacy level of the sampled countries ranges from less than 30 percent in the case of Pakistan and Nepal to 99 percent in the case of Japan and the former Soviet Union states of Tajikistan, Turkmenistan and Uzbekistan. Illiteracy is still high in many parts of Asia. For example, the average age a student in Nepal leaves school is 11, after receiving five years of formal education; and in Bangladesh, a child only gets to study for four years (Euromonitor International, 2003).

Despite the widespread belief that the Internet use is very much based on language skills, especially in the early years of the Internet when it was more textual than visual, the big variation in literacy development in Asia does not covariate with the equally big variation in Internet penetration rate. In the early stages of Internet development, there was no significant relationship between literacy and Internet penetration at all. Even in recent years, the correlation has not been so strongly significant. The scatter plot presented in the chart below shows that countries with a low penetration rate may vary a lot in terms of their literacy rate, ranging from as low as less than 30 percent in the case of Pakistan and Nepal to as high as over 90 percent in the case of Vietnam and former Soviet Union states. Such results do not lend enough support to Hypothesis 2, which predicts that the higher the literacy rate of a country’s population, the higher the diffusion rate of the Internet.
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Daniel Lerner (1958) proposed that urbanization would lead to literary and greater use of the media. Along the same line of thinking, we assume that urbanization would lead to higher Internet penetration. In addition to the expectation of greater needs of the urban residents for the Internet, compact living environment in the urban areas also facilitates the Internet deployment. The great variation in the proportion of urban population of the sampled countries, ranging from 7.4 to 100 percent, allowed us a better view of the relationship between Internet development and urbanization in Asia.

In general, our data show that the Internet access in urban areas tends to be greater than in rural areas, lending support to Hypothesis 3. The correlation coefficients for Internet penetration and urbanization are consistently significant during the four different periods.

The Internet was invented and first popularized in the West. As a result, it has been dominated by content in English, especially during the early stages of the Internet development. One study (Teltscher, 2002) showed that 95 percent of Web pages were in English in 1999. Therefore, it is natural for us to assume that countries in which people have a better command of the English language tend to have greater needs for and derive greater gratification from using the Internet, and this may lead to greater penetration of the Internet in these countries.

However, our correlation test does not show any significant relationship between Internet penetration and mastery of English as indicated by the average TOEFL (Test of English as a Foreign Language) score achieved by students from a country. The scatter plot presented in the figure shows the correlation of literacy and Internet penetration for 2002.
in the following chart does not show a linear pattern of the relationship between TOEFL score and Internet penetration. Countries lying on the lower end of Internet penetration vary a great deal in terms of the average TOEFL score of their students. Countries like India and the Philippines, where English is a common language, lag behind in Internet diffusion, but countries with low English proficiency such as Japan and Taiwan achieve high Internet penetration. Therefore, Hypothesis 4, which predicts that English proficiency is linked to the Internet development, is rejected.

![Figure 2: Scatter plot of the relationship between TOEFL test scores and Internet penetration.](image)

The presence of adequate infrastructure in a country is believed to facilitate the adoption of the Internet by organizations and individuals (Bazar and Boalch, 1997). Therefore, it is not a surprise to see a strong relationship between telecommunication infrastructure and Internet penetration. The correlation between telecommunication infrastructure and Internet penetration remained highly significant during all the four different periods. Hypothesis 5, which predicts that a well-established telecommunication infrastructure tends to associate with a high dispersion rate of the Internet, is thus supported.

The ease of information brought about by electronic means poses challenges to political regimes that depend on information control for survival. According to a United Nations Development Programme (2003) report, government opposition to ICT and the lack of
Factors affecting Internet development in a country have been major factors limiting the Internet access. Political freedom is thus assumed to have a link to the deployment of the Internet in a country. In addition, where there is less political freedom, political censorship and the monitoring of the Internet use tend to be strong, directly affecting the popular use of the Internet.

Our data failed to show a significant relationship between political freedom and Internet development during the early years of the Internet. Although such a relationship seemed to have become significant in recent years, the significance is not very strong. The scatter plot in Figure 3 shows that there is a big range in terms of political freedom among those countries that have low Internet penetration. Countries like India, Indonesia, Thailand and the Philippines may enjoy greater political freedom in Asia, but their Internet growth is slow. On the other hand, countries like Singapore may score poorly in terms of political freedom but its Internet penetration is higher than other countries. Hypothesis 6, which predicts that greater political freedom promotes faster Internet growth, is not fully supported.

Figure 3: Scatter plot of the relationship between political freedom and penetration. Note: Political freedom is measured in such a way that a smaller number indicates greater political freedom.
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The history of the Internet shows that the government has to play an important role in Internet development, at least in the initial stage, because the Internet does not generate immediate financial returns for its developers. In such a situation, political stability becomes an important issue in the sense that governments which may not stay in power for long are more reluctant to invest in Internet development as such investment of time, effort and resources may not lead to immediate results. Only governments that are going to survive are more likely to invest in developing the Internet. Unfortunately, many Asian countries tend to see their government changing hands too often through either military action or peaceful election, leaving not much room for the government to work on long–term projects like Internet development.

Our findings show that there is a significant relationship between government stability and Internet penetration. Although the correlation is not as strong as that between Internet penetration and the wealth of a nation or the development of the telecommunication infrastructure, it is significant throughout the four different periods. Therefore, Hypothesis 7, which predicts that political stability in a country tends to promote faster Internet development, is supported.

Discussion and conclusions

In this study, we examined a number of factors that may have facilitated or hindered the Internet development in Asian countries. The results show that GDP per capita, telecommunication infrastructure, urbanization and political stability correlate with Internet penetration in a country. Although our sample size is not big enough to allow us to carry out more sophisticated statistical analyses, such as multiple regression to gain more confidence on the potential causal relationship between the independent and dependent variables, our findings nevertheless lend support to a number of assumptions.

As for the four hypotheses supported by our findings, we believe the relationships can be causal in nature although variables such a GDP per capita and telecommunication infrastructure do correlate with each other. GDP per capita indicates a country’s economic strength as well as individual wealth. The deployment of the Internet is a costly venture and only countries with strong economic power are able to build the Internet in such a way that it allows access to as many people as possible. On the other hand, individual access to the Internet is also based on cost–sharing by investors and users. That means the financial situation of the ordinary citizen also plays a crucial role in ensuring public access to the Internet. To a certain extent, Internet development is more likely to be affected by economic factors rather than social and political factors.
The Internet is part of a nation’s telecommunication system. Therefore, it is no surprise that we could always see strong ties between other indicators tracking the development of the telecommunication infrastructure and Internet penetration rate. The telecommunication infrastructure provides the means for the Internet diffusion as the access of most individuals to the Internet depends on the existing telephone or cable lines.

Although the development of ICT has increasingly helped to reduce the bias of space in communication, distance remains a handicap to wired communication, which remains the dominant means for connecting computers together. That naturally increases the cost for building Internet links over vast distances. In this sense, urbanization not only increases the need for communication (Lerner, 1958), but also reduces the costs for communication. The cost to wire up 100 computers in a compact living community is only a small fraction of what is needed to hook up 100 computers in rural areas. In addition, the urban population tends to enjoy a higher income, thus making the Internet access more affordable.

Of the four variables that correlate with Internet penetration, political stability offers the least obvious link to Internet development. Although we cannot prove a causal relationship between political stability and Internet penetration, a logical link can be conceived in the sense that long–term projects like Internet deployment are only attractive to those who can wait to see their results.

The fact that the Internet started as and to a certain extent still is an English–dominated medium for communication does not seem to be a barrier to Asian countries. This is partly because that many of the non–English speaking countries in Asia are big enough to create their own national network within the global Internet. To the majority of people in China, Korea, Taiwan, Hong Kong and Japan, the Internet is more domestic and regional than global. The Internet offers these large non–English speaking countries enough space and attractions for them to hook up even though their personal use of the Internet is much less global in nature. Such a phenomenon should not blind us to the fact that small non–English countries like Cambodia face enormous difficulty in tapping the potential of the Internet as an information source unless they share a common language with a larger nation that can afford to cultivate a national Internet localized for its purposes.

As far as literacy is concerned, it does not seem to have a significant impact on the development of the Internet in Asia as the Internet penetration rate remains too low in most Asia countries. As long as Internet access remains a privilege for the elite, literacy will not be a significant factor affecting the Internet growth, but literacy could become a significant factor when the Internet usage passes its elite stage to enter a popular stage. You would not expect a country like Nepal or Pakistan to reach the kind of Internet penetration rate enjoyed by Singapore or Japan, when the majority of their adult population is illiterate. As long as basic computer skills require basic education, we are unlikely to see widespread
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access of the Internet in those countries with high illiteracy.

Political freedom was not found to be a significant factor in Internet development. Free exchange of information poses challenges to any regimes that depend on political control to maintain their legitimacy. The non–significant relationship between political freedom and Internet penetration may be explained by the fact that many authoritarian societies also see the advantages of the Internet. Quite often economic reasons for promoting the Internet outweigh political considerations for inhibiting Internet development. On the other hand, the fact that many of the more politically liberal countries in Asia happen to be economically poor and backward in telecommunication development also contributes to the non–significant relationship between political freedom and the Internet growth.

Although this study is based on a sample of Asian countries, its findings might contribute to a better understanding of various economic, social and political factors that may affect Internet growth in other countries. In that sense, the findings of this study are by no means limited to an Asian context.

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Notes


2. This is based on statistics compiled for this study.

3. These figures are based on statistics compiled for this study.

4. The UNESCO study is mentioned in Gurung (2003).
5. English proficiency is measured by the average TOEFL test score of a country. The TOEFL score was chosen instead of other possible indicators of English level because of its consistency, comparability and accuracy in reflecting the real English level of people in a country.

6. Telecommunication infrastructure is measured by the number of telephone lines per 1,000 inhabitants.

References


