COMPUTER & INTERNET USAGE IN HIGHER EDUCATION IN DEVELOPING COUNTRIES: CASE FOR KYRGYZ UNIVERSITY STUDENTS

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Abstract
The usage of computer & internet in higher education in developed countries among students is a common practice. In this paper, we search how frequently students in developing countries are using computer & internet for academic and non-academic purposes. The uneven distribution of these technologies across the world has been called the digital divide. The survey among Kyrgyz students indicates that digital divide exists seriously between developing and developed countries in higher education. Most of students don’t have computer and internet access. Lack of ownership is more acute in internet access since the computer is a fixed cost and it is only paid in the beginning, however, the internet has a high variable cost which requires constant monthly payment. The high cost of internet and computer in student’s budget is the main factor of lack of ownership. 80% of students almost never send their homework by e-mail. This is also an indicator of the lack of institutional academic culture in Kyrgyz universities among instructors.

Key Words: Central Asia- Kyrgyzstan- Computer-Internet- Digital Divide

Introduction:

The usage of computer & internet in higher education in developed countries among students is a common practice. In this paper, we search how frequently students in developing countries are using computer & internet for academic and non-academic purposes. The uneven distribution of these technologies across the world has been called the digital divide (Hafkin and Taggart, 2001). Kyrgyzstan represents a developing country with $350 income per capita and extensive agriculture output (35% of GDP) (World Bank, 2009). In this research, we made a survey on Kyrgyz university students regarding ownership of computer & internet, frequency of using computer & internet in academic and non-academic purposes.

Developing countries need to embrace information technology (IT) to increase economic growth (Enriquez, 2005). The use of new technology is crucial in developing countries to alleviate the poverty. To augment income per capita, the economic growth should be higher than population growth. The technology offers an opportunity to increase production given capital and labor inputs (Feder et al. 1985). Improvement planning by getting more information, more accurate prediction of weather and climate, well-protected water reservoirs, management of rivers, and irrigation will raise the production (Mansell and When, 1998). IT technology may support many fields in a developing countries such as farming (harvest and market their produce) and
small businesses for supply (obtaining inputs) and demand (new and existing customers) (Hafkin and Taggart, 2001).

The impact of IT technology on Israel, Taiwan and Ireland is enormous in 1970s and 1980s (Breznitz, 2007). Only Microsoft accounts more than 15% of export of Ireland. A similar event occurred in India and China in 1990s (Das, 2002). Especially the outsourcing opportunities vastly have increased (Friedman, 2000 and 2007). All these countries heavily invested for technology education. The U.S. Department of Education (1996) defines technology literacy as "computer skills and the ability to use computers and other technology to improve learning, productivity, and performance." It lists four goals related to technology literacy that ensure all students and teachers

- "All teachers in the nation will have the training and support they need to help students learn using computers and the information superhighway."

- "All teachers and students will have modern multimedia computers in their classrooms."

- "Every classroom will be connected to the information superhighway."

- "Effective software and on-line learning resources will be an integral part of every school's curriculum." (www.ncrel.org).

Technology should be integrated into education to improve students’ skills at school time and business. (Hafkin and Taggart, 2001). The weak attitude of students towards IT will lead rare exploration IT in business life. Moreover, IT is used in all sectors. IT promotes new and better businesses, participation in the political process, and communication with the world (Hoffman and Novak 1998).

Constraint to the rapid adoption of innovation in developing countries is the lack of credit; limited access of information (lack of literacy); aversion of risk; inadequate farm&firm size; inadequate incentives; insufficient human capital; chaotic supply of complementary inputs; inappropriate transportation infrastructure, social norms&culture and copyrights (Feder et al., 1985; Hafkin and Taggart, 2001). Price control, regulations on foreign trade, foreign currency and tax, policy instability, and general uncertainties are burdensome in operating companies in developing countries (Tybout, 2000).

Digital divide between the information have and have nots exists in racial, gender, income groups and nations. In developed countries, the gap among different categories of users is disappearing into overtime (Odell et.al, 2000; Hoffman and Novak, 1998). Higher household income positively affects access to a computer but with more affordable access fees, low income groups start getting access to computer and internet in developed countries.

The digital divide persists among developed and developing countries. When we look in figure for Internet users per 1000 people, we notice above 300 users per 1000 in the developed countries and 3 in developing countries (figure 1).

**Figure 1. Internet Users (per 1000 people) in 2000**

![Internet Users (per 1000 people) in 2000](image-url)
Source World Bank 2005

Certainly, within developing countries the digital divide among gender, income and race still continue. Internet users in most developing countries are not representative of women in the country as a whole but rather are part of small, urban educated elite. (Hafkin and Taggart 2001). U.N. ranks access to IT as the third most important issues facing women globally, after poverty and violence against women (Hafkin and Taggart, 2001).

Taking advantage of the opportunities will also take awareness an action because most people in developing countries are unaware of technology (Hafkin and Taggart, 2001). To increase use of Internet in Dominican Republic and Colombia, free or reduced connection for the research and academic community to the public data network and the internet are introduced. Second hand market is common in developing countries. Providers are encouraged to offer machine parts for older system for the second hand market (Mansell and When, 1998).

Fees are one of the main factors of low level of usage. In Bangladesh, the cost of connecting the internet can exceed food expenditure of a family for a year. In the Philippines 200 dollars fees for Internet is very high for middle class. In Ethiopia, 20 hours of Internet access per month for a year is equivalent to 8.4 times the GDP per capita (Hafkin and Taggart, 2001). Increase market liberation among providers will increase the quality and price (Mansell and When, 1998).

**Figure 2. Internet Users (per 1000 people) in Kyrgyzstan**

![Graph showing Internet Users (per 1000 people) in Kyrgyzstan from 1998 to 2003](image)

Source: World Bank 2005

Section 2. Survey Questions and Methods

We ask 36 undergraduate Kyrgyz students the following questions.

Make the circle for the relevant answer

1. Do you have a computer Yes No
2. You don’t have a computer because too expensive
3. Do you have internet connection Yes No?
4. You don’t have internet because too expensive
5. Enough internet connections in universities academically seldom required.
How often do you use computer & internet a week for academic purposes?
1 time
5 times
more than 5 times
5. How often do you use computer & internet a week for non-academic purposes?
1 time
5 times
more than 5 times
6. Are you sending your homework via internet
null
seldom
often
always?

3. Results of Survey

1. Do you have a computer?
   The result indicates that 53% of students don’t have a computer and 47% of them has the computer (figure 3).

2. You don’t have a computer because
   74% of students answer that computers are too expensive, 21% of them state that enough computers exist in universities and just 5% of them accept that the computer academically seldom requires (figure 4). This answer indicates the poverty is the main issue of the lack of the computer ownership among higher education students. It is an expected answer. The cost of computer is 150% of income per capita (computer costs around $500 and income per capita in Kyrgyzstan is $350).

   Most people in developing countries dealing with IT use computers in the work. Except in upper-income groups, home access to a computer and the Internet is not a common practice.
3. Do you have internet connections?

26% of students say yes and 74% of students say no. The percentage of ownership of internet is less than the one of the computer (figure 5). The reason might be that the computer is a fixed cost, and it is only paid in the beginning. However, the internet has a high variable cost, which requires a constant monthly payment.

Figure 5. Percentage of Ownership Internet Access

4. You don’t have internet because

62% of students consider internet too expensive, 24% of them answer that enough internet access in university exists and just 14% of them accept that the computer academically seldom requires (figure 6). This answer shows that the poverty is the main issue of the lack of the internet ownership among higher education students as in the case of computer ownership. One way to lower the internet fees is to liberalize the market to increase competition.
Figure 6 Reasons of Not Having Internet

- 60% too expensive
- 20% enough computers in universities
- 20% academically seldom required

54% of students use the computer & internet once weekly, 27% of students 5 times weekly and only 19% of them more than 5 times for the academic purpose. The result indicates that students have a weak aptitude towards IT for the academic purpose.

Figure 7. Frequency of Usage Computer & Internet for Academic Purpose (Weekly)

- 60% 1 time
- 30% 5 times
- 10% more than 5 times

5. How often do you use computer & internet a week for non-academic purposes? 46% of students use the computer & internet once weekly, 40% of students 5 times weekly and only 14% of them more than 5 times for the non-academic purpose (figure 7).
result confirms that both academic and non-academic usages are low. However, non-academic usage is more intense since more 13% of students enter a computer in the category of 5 times for non-academic purposes.

Figure 8. Frequency of Usage Computer & Internet for non-Academic Purpose (Weekly)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>1 time</td>
<td>5%</td>
</tr>
<tr>
<td>5 times</td>
<td>45%</td>
</tr>
<tr>
<td>more than 5 times</td>
<td>50%</td>
</tr>
</tbody>
</table>

Are you sending your homework via the internet?

The institutional culture of structure in which the training is occurred also determines people’s likelihood of accessing IT training (Hafkin and Taggart, 2001). Instructors are leading figures in a student life. Promoting computer & internet applications should be part of the duty of instructors. 28% of students answer null, 53% of them seldom, 11% of them often and only 8% always (figure 8). We may meet some students who never send his homework by e-mail.

Figure 9 Frequency of Sending Homeworks via e-mail

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>null</td>
<td>60%</td>
</tr>
<tr>
<td>seldom</td>
<td>30%</td>
</tr>
<tr>
<td>often</td>
<td>10%</td>
</tr>
<tr>
<td>always</td>
<td>0%</td>
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</tbody>
</table>
Conclusion

The use of new technology is crucial in developing countries to alleviate the poverty. The knowledge-based economy requires extensive technology usage. However, the internet access in low income countries is 3 per 1000 and in high income countries 330 per 1000. We notice that digital division is also valid in the usage of compute & internet usage among Kyrgyz university students. The survey’s results indicate that most of the students don’t have computer and internet access. Lack of ownership is more acute in internet access since the computer is a fixed cost, and it is only paid in the beginning. However, the internet has a high variable cost, which requires a constant monthly payment.

The high cost of internet and computer relatively student’s budget is the first factor of lack of ownership. Liberalization of the market and subsidies and credit of government might be a solution to tackle for the financial obstacle.

The internet & computer usage is weak since half of students use them only once a week. The limited facilities in academics and lack of ownership of computer and internet cause few visits to computer for the academic purpose.

80% of students almost never send their homework by e-mail. This is also an indicator of the lack of academic institutional culture in Kyrgyz universities among instructors.

References