

An Empirical Study of potential challenges and Benefits of Implementing E-learning in Sri Lanka

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Abstract

This paper discusses the potential challenges and Benefits of Implementing E-Learning in Sri Lanka by reviewing the awareness and readiness of the selected higher educational institutes. This study also identifies the enabling factors, the bottlenecks and, forecasts the future growth of E-learning in Sri Lanka as a host in Asia. Of 50 Educational institutes selected from different specialization areas, 24 responded with usable answers. The response rate was 48%, which is an expected rate for such surveys. Awareness of e-learning among the educational Institute is very high but investment to develop an e-learning application is very poor according to the survey. Most of them use Internet related e-learning site just for the sake of it and not to do real online learning. There is a trend of creating a web page in most of the Institutes. Further, findings reveal that these Institutes have also been using e-mail and Internet in addition to developing web pages for transaction of students. They have planned to invest number of funds in future in the selected areas of the e- application. The ANOVA result shows that there are significant differences across both forms of e-learning and type of educational Institutes.

1. Introduction

The modern world is undergoing a fundamental transformation as the industrial society of the twentieth century rapidly gives way to the information society of the twenty-first century. This dynamic process promises

a fundamental change in all aspects of our lives, including knowledge dissemination, social interaction, business practices, political engagement, media, education, health, leisure and entertainment.

The speed of global technological and economic transformation demands urgent action to turn the present digital divide into digital opportunities for all. A discussion about the allocation of resources is imminent if we look at the connectivity of the Internet in developing countries. One way to measure the digital divide is to monitor the penetration of telephone subscribers and Internet users, as well as literacy rates in developing countries. Poor access to the Internet in Sri Lanka is widely acknowledged.

Since the bursting of the “dot.com” bubble, e-commerce has been growing by about 35 per cent a year, whereas traditional growth is only 4 to 5 percent. Despite the economic slowdown, the number of Internet users worldwide has almost tripled, from just over 200 million at the start of 2000 to more than 600 million in 2002. This number is projected to reach 25 billion at the end of 2006. By then, many are expected to be using devices such as cell phones other than personal computers for access to the Internet. In China, for example, there are 5 million new cell phone users each month.

In the Millennium Declaration, UN Member States agreed upon a number of key development goals. In addition to a commitment to reduce poverty, improve health, ensure environmental sustainability

and promote education, one Millennium Development Goal (MDG) requires making available “the benefits of new technologies—especially information and communication technologies”.

The rapid expansion of mobile telephony and the emergence of wireless and satellite-based solutions for low-cost Internet access have increased significantly the potential for information and communication technology (ICT). Therefore, the United Nations in 2001 created the UN Information and Communication Technologies Task Force, with the aim of bridging the global digital divide, fostering digital opportunity and putting ICT at the service of development for all.

Important support for the MDGs can be achieved with the use of ICTs. Internet technologies offer extensive development opportunities, particularly for people in rural areas and living in poverty. Wireless Internet technologies could allow developing countries to generations of telecommunications. Connecting local communities in developing regions to the Internet will have a positive impact on education and their health system. The Internet complements locally available information, improves and accelerates knowledge flows, and can be used to deliver innovative education models to remote areas.

There is a broader debate that comes to mind when thinking of the introduction of e-learning in the developing world. Development organizations must continue to focus on addressing the most basic needs, such as building more classrooms and providing clean water. However, ICTs can be part of the solution. If education and capacity-building are critical steps for entering into the new global economy, e-learning should be considered a critical facet of basic development, an alternative medium of capacity-building and a means to people’s empowerment.

Computer-literacy is an imperative precondition for learners to benefit from technology-based learning. E-learning can only build on a set of basic computer literacy skills. Learners should go through an introductory session for each programme that focuses on professional development in the use of technology in the classroom.

However, given the target audience, issues related to multicultural communications and the placement of content on the Internet in native languages other than English also need to be addressed. The lack of content in native languages is a serious impediment to Internet use in many countries. Even in the developed world, the preponderance of English online poses a serious obstacle to universal access. The most effective way to make e-learning a successful experience is to keep it as simple as possible. This is particularly true from a technological perspective, as well as valid from a pedagogical perspective. One has to know how to target the audience, consisting of working adults who have limited free time and experience learning online, which, as with any distance learning, requires a lot of self-discipline and time-management skills.

Furthermore, most adult participants have been educated in a didactic manner and do not necessarily understand the instructor as a “facilitator” rather than as a “teacher” in the traditional sense. Studies in e-learning have shown that most programmes are likely to succeed with the constant involvement of the facilitator through e-mail discussion lists and individualized messages. The facilitator’s constant involvement and feedback are the most powerful support for the learner. Many online courses consist of nothing but instructional material (unsupported web-based trainings); others provide a forum for exchange. Very sophisticated courses combine all elements of online learning in one design called “blended learning” and are the best way to create educational environments.

2. Most successful factors affecting E-Learning

The most successful factors affecting online training and further education through E-learning are based on the following four basic elements:

- ??Instructional material is important. Learners take online courses more seriously if they receive material to work with: e.g., books, CD-ROMs, which also save online time.
- ??Tutorial support provides motivation. Learners often need guidance and support from instructors, coaches, tutors or technical staff. However, this is also a question of costs—how much financial means an online course has.
- ??Communication. Using telecommunication tools like the Internet facilitates not only the distribution of information but also the interaction between learners and instructors, as well as among learners themselves. Giving them the opportunity to share knowledge, experience and perspectives is a central demand of instructional theories.
- ??Collaboration combines the demand for social communicative learning with the instructional demand for active learning. Working in small groups on assignments, examples and cases meets these demands.

For e-learning to succeed in the developing world, it needs to build on another important pillar: the existence of infrastructure, along with some degree of connectivity. A growing difference in market liberalization of the Internet- access supply is leading to another kind of “digital divide” on the global scale: many countries have introduced or are introducing telecommunications regulations that discourage the development of Internet-access service through competition. Granting monopoly to a national operator and

charging high license fees for Internet-access service are examples of market barriers. Such regulations, found mostly in emerging economies, are a serious obstacle.

Moreover, other technical constraints have to be overcome. The most common encountered are issues such as unreliable Internet connection and phone lines, slow access to web sites due to narrow bandwidth and limited numbers of computers connected to the Internet. Therefore, a key challenge is that technological requirements must be kept to a minimum in order to increase the participation of developing countries.

Easy access to all course materials is essential. Given the technological constraints that users in developing countries have to face, asking them to download or print documents from a web site is just too much. Most learners do not own a computer and have Internet access only from the workplace or public telecentres. Promoting telecentres in emerging economies around the world is important to help achieve significant steps forward in making Internet access and services more widespread, especially in rural areas. It is, therefore, fundamental to implement self-sustaining Internet training centers, which will eventually allow developing countries to keep pace with developed countries and give them access to technological and academic information, as well as Internet training at various levels. The benefits they gain will thus affect every aspect of their personal and professional life.

3. ICT in Sri Lanka

The software and telecom sectors of Sri Lanka’s ICT industry, despite many problems and a relatively small size, are thriving. There are nonetheless a number of significant problems facing the industry. They include lack of transparency in government acquisitions (the largest prospective client), lack of moderately priced international bandwidth, lack of trained ICT professionals and a management-class

knowledgeable about ICT and a tax structure that does not reward local sales. In recent years, USAID has funded a number of projects aimed at increasing the competitiveness of various industries in Sri Lanka, and ICT is one of their prime focal point. The use of ICT in the commercial sector in general is irregular. Some financial institutions have invested heavily in ICT, and, as a result, are country leaders in the use of technology.

Other sectors are far behind in their use of ICT. Even those companies that have invested in ICT often do so in restricted ways that are poorly integrated into their businesses. In part of this is related to the small percentage of Sri Lankans with access to the Internet, but the prime reason is, no doubt, the low level of managerial knowledge about the ICT capabilities in their business area.

At all levels of aggregation, statistics about any aspect of ICT in Sri Lanka are highly misleading and can be deceptive when used for policy purposes. Virtually all ICT activity is centered in Colombo, with small pockets in the Galle and Kandy areas. There is clearly a desire to spread ICT development over a wider geographic area than just Colombo, but it appears that it is not going to be an easy task.

The regions outside of the urban areas are particularly poorly served with respect to electricity and telecommunications. Moreover, the rural areas do not provide the level of comforts and conveniences often (but not always) expected by people with the high-end technical and managerial skills needed to drive this sector. The supply of lower level technical skills is substantially lower in these regions. The shortage of knowledgeable teachers and trainers willing to work in rural areas compounds and propagates the problem. The tele center movement is in its infancy in Sri Lanka. Tele centers are community-based points of access to telecom and digital services. In

many countries, tele centers have provided the focal point for introducing technology into rural areas, and in fact to disadvantaged groups in urban settings. The concept shows up in many reports and plans, but despite this, there are very few active tele centers.

Sri Lanka is a country that depends on the support of developed countries and international agencies. Although this support is greatly appreciated, at times the donor agencies invest in ways that are, at best, uncoordinated, and a poor use of scarce foreign funding and scarce domestic human and organizational resources. The support needs to be better integrated within national planning and priority setting exercises.

Sri Lanka tends to look exclusively towards countries such as India and Singapore for its models and alliances. Cooperative opportunities from other areas, and particularly those related to the British Commonwealth or the United Nations seem to be particularly ignored, despite their potentially beneficial nature.

It has achieved levels of life expectancy, education and health on a par with countries having twice Sri Lanka's real Gross Domestic Product (GDP) per capita. It has maintained and improved that performance while having to deal with domestic political problems which saw a major increase in military expenditures during the 1990's and an over five-fold increase in persons in the military between 1985 and 1995.

Sri Lanka remains a mainly rural country while facing increasing urbanization with an expected one-third of its population residing in urban areas by the year 2015.

Nowhere are the achievements, contrasts and challenges more apparent than in the deployment of technology across the regions of Sri Lanka and the sectors of the Sri Lanka's economy. The country has achieved a United Nations Development Program Human Development Index that is impressive relative to its GDP per capita. Its health care system includes the latest

technologies, open-heart surgery, CT and MRI scans (although access to some of these in public hospitals is limited), while at the same time relying on patient record systems from the 1800s, or no patient records at all. The south west and the Colombo area in particular have fiber-optic networks. Universities teach advanced computer science programs, but the entire administration of the university, including these student's academic records, is based on paper and manual operations. The government of Sri Lanka began to focus on ICT issues in the mid-1980. However, today, in 2005, it is still trying to adjust several crucial policies to allow the unimpeded development of ICT in the public and private sectors.

4. Human Resources and the Education Sector

Education has been a priority in Sri Lanka since ancient times, and continues to date.

This is resulting in one of the highest literacy rates in the area. However, for ICT Development and growth, general literacy is not sufficient. An adequate supply of skilled ICT professionals, as well as workers and citizens trained in computer uses, and a population literate in the use and uses of computers and telecommunications are clearly required in Sri Lanka. They are required both for Sri Lanka's success in the development and application of an ICT sector, and for enlisting ICT in Sri Lanka's overall development. At the moment, adequate supplies of all three forms of ICT-literate human resources are problematic. There are serious supply constraints in the provision of skilled ICT professionals. The level of worker and citizen training in computer use is low. General ICT literacy is low, particularly in the rural sector. It is notably low or spotty in many areas of government, a sector that in many countries leads the others in the use of ICT.

4.1 Education Sector

The educational sector has multiple and special roles to play in assisting ICT in the development of the nation. Consider the post-secondary (university) sector. It is a producer of ICT inputs in the forms of skills ICT workers and, where successful, a producer of new inventions and ideas. It is a major source of skilled labour, and leadership material, for the other sectors in the economy. It thus has a duty to equip those graduates with the tools and knowledge to use ICTs in their daily work. It also has a duty to help both students and the community understand the social, economic and organizational issues surrounding ICT policy and deployment at all levels in society. It is (or should be) a consumer of ICTs in the execution of its duties as an educational sector. In developed countries, along with the health sector, and social services (pensions, welfare, etc.) it has a major demand for information management systems (MIS) to track product (transcripts, courses, facilities, staff, etc.). In reality, in Sri Lanka, the entire operation of most universities (with the possible exception of payroll) is performed manually. Beyond its MIS demands education is expected to experience major benefits from the use of ICT for technology-enhanced-learning (TEL). TEL includes program of electronic/digital supports for distance education, to technology-enhanced classrooms, and virtual laboratories. Networked access is also seen as an efficient response to binding constraints in terms of trained instructors and classroom facilities.

This is an area where the Ministry responsible for primary and secondary education can take the lead, not only in setting policy and implementation, but also in drawing together that consortium of stakeholders whose wisdom and support will be necessary to make things work. Formulating where to start this process should be one result of a Ministry

participation in a national ICT planning process. Recent reports indicate that the Ministry of Education will be seriously addressing the issue of technology in schools.

4.2 Skilled ICT Professionals

The lack of sufficient, trained ICT professional has been a recurring focus in ICT studies and reports in Sri Lanka. There seems to be four main drivers for this shortage:

Sri Lanka produces only a small number of ICT-trained University graduates (high quality) each year. The number of positions in the state-funded universities is severely limited. This is part of a bigger problem. Sri Lanka has a good record for primary and secondary education but admits to university only about 6% of successful secondary school leavers (12,000 out of 200,000). Sri Lanka loses many ICT graduates soon after graduating. Their ICT skills demand far higher salaries abroad. As well, the ongoing civil unrest has been a contributing factor. Sri Lanka has a number of state-supported, commercial and quasi-private technical training institutes. However, the quality of training is highly variable. Sri Lanka faces a serious shortage of experienced ICT professionals. senior people with 6-10 years experience in: software design, project management and network design and management.

4.3 Professionals leaving the country

Discussions with Sri Lankan software companies and educational institutions indicate that a typical salary for an ICT university-graduate is approximately US\$200- 300/month. In private industry this may typically rise to as high as US\$1,000/month after, several years, depending on individual skills and business conditions. These salaries do not compete with overseas salaries if the person has an interest in leaving Sri Lanka. While there are non-pecuniary attractions for individuals to

remain in Sri Lanka (family, life style), the salary differential is a factor that cannot easily be changed. Some leading software firms pay as high as \$1,750/month for their best staff. At that level, retention rates rise significantly. There are some attempts to repatriate overseas Sri Lankan ICT professionals back to Sri Lanka. This has been more successful in recent times with the end of the overheated overseas market for ICT skills during the so-called .dotcom boom. This is probably only a full in foreign demand since the history of technology always sees a slow but steady post-bust increase in demand ultimately exceeding the levels achieved prior to the bust.. Two skills retention strategies that seem to be underdeveloped in Sri Lanka are the virtual repatriation of the skills of expatriates, and the retention of ICT professionals by linking them on-line to education, research and work abroad. Some Latin- American countries, for example, resort to the Internet to repatriate the skills of overseas nationals, for use in education, research and development, industry, and for civil society activities. Such efforts are low cost and in many cases they are organized by the expatriates themselves. Other countries, Ghana for example, have used the Internet to retain local skills, for example by linking local medical researchers to overseas research networks.

Table 1: ICT Parameters

ICT Parameters	Sri Lanka	India	Poland	Sweden
Population	19.4 million	1.03 Billion	38.6 million	0.88 million
ISPs Operating	5	43	19	29
No of Fixed Line	25.5	26.9	208.9	678.0
Expansion Rate	14%	23%	8%	3%
Mobile Phones*	11.8	2.8	46.1	436.6
Expansion Rate	67%	90%	71%	23%
Internet users*	3	4	72	507
Expansion Rate	78%	53%	98%	14%
No of PCs*	135			4500

*per 1000 people

4.4 Computer-aware Population and Primary/Secondary/Tertiary Education

As ICT becomes more a part of everyday life, it will be increasingly necessary for all citizens to have some basic familiarity with computers. Technology revolutions are complete when such skills are taken for granted and the technology seems to have disappeared into the background. It is easy to say using them in primary and secondary schools will help. It is more difficult to say what this means in actual practice. It can mean using computers to increase the efficiency of administration and management of the schools. It can mean using them to produce more and better teachers. It can mean using them to deliver better curriculum and a better learning experience.

4.5 Internet Access

There are many ISPs in Sri Lanka, with SLT being the largest. At last count, there were 17 active providers, with an additional 10 licenses issued. Most of these players are quite small. The vast majority of subscribers are in the Colombo area, but there are points-of-presence in several other urban centers. SLT offers access to its ISP service as a local call from anywhere on the island. However, this service is only available to those who use SLT local loops for their voice telephone. The cost of Internet ISP access is comparable to similar services elsewhere in the world. Many non-SLT providers only offer 28.8/33.6 kbps dial service, and access from many non-SLT local loops is limited to 28.8 (presumably due to the use of compressed 32kb voice services). A typical cost (from SLT) is US\$11 per month for 150 hours. The actual per minute cost of dialup Internet access is normally high because of the additional per-minute cost of voice service in Sri Lanka. The base cost of a telephone line is low (about US\$3-4 per month). However, the cost per minute, particularly during weekday daylight hours, is abnormally high

(for SLT it is US\$1.80 per hour after the first 8 hours) The overall conclusion is that the ability to access the Internet is not quite as bullet-proof as the suppliers claim. Discussions with both SLT and TRC employees indicated that moderate to heavy Internet users would have more economical access with a leased line (at about US\$200 per month), a solution that is not economical in its own right, nor feasible for the vast majority of Internet users in Sri Lanka.

5. Conclusion

Most observers believe that the industry must be completely opened up, with a level playing field for all players and a competitive market for ICT services, including VoIP. Both safeguards and new initiatives are needed to ensure that rural areas are well served. Of particular import is competitive market access to external connectivity. With the emergence of wireless competitors, SLT has demonstrated that they can adapt and could successfully compete in a competitive environment. In some ways SLT has followed the market in a sector where strategic leadership involves leading the market. In a more competitive environment, new and enhanced products and services will be offered to lead the market, attracting business that would otherwise bypass Sri Lanka altogether.

The use of the Internet is just a particular ICT application, but nevertheless a cornerstone application. Moreover, the problems here are symptomatic of the more general ICT issues in Sri Lanka. As mentioned above, various industries in Sri Lanka are making use of e-mail and the web. However, it is notable that virtually none of them have truly integrated it into their business. It was difficult to find examples where the use of either e-mail or the web was a crucial link to business success. More likely, it was ancillary, and not highly viewed. As an example mentioned earlier, some hotels have web sites and even allow

booking over the web. But they don't actually expect people to use it, and set prices online to virtually ensure that it is not used. Web sites are typically very incomplete, and generally lack sufficient information (such as prices) to be used as a practical selling medium. Certainly part of the reluctance of businesses to use the Internet is the relatively small number of Internet users within the country. Even the bank that has instituted Internet banking has done so for the visibility it provides, not because it is a major path for customer activity. This will not likely change without some economic motive, which will not be there until there is far wider use of the Internet in general. That will not happen without lowered price barriers, enhanced rural access and increased ICT literacy.

References

- [1] Clemons, EK., and Wilkinson, L. (1996) "Future Scenarios: Business and Social Implications of Rapid Technology Introduction and Adoption", *Proceedings of the Hawaii International Conference on Systems Sciences*
- [2] Curtain, R. (2004) "Information and Communications Technologies and Development: Help or Hindrance?", *Melbourne: Curtain Consulting.*
- [3] Davison, R., Vogel, D., Harris, R., and Jones, N. (2000) "Technology Leapfrogging in Developing Countries - An Inevitable Luxury?", *The Electronic Journal on Information Systems in Developing Countries (EJISDC)*, 1, 5, 1-10.
- [4] Ein-Dor, P., Segev, E., and Orgad, M. (1992) "The Effect of National Culture on IS: Implications for International Information Systems", *Journal of Global Information Management*, 1, 1, 33-44.