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2000

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Abstract

The authors conducted a study of the state of the Internet and telecommunication in Nepal during January, 2000 (ITU, 2000). Part of our charge was to recommend electronic commerce projects that would generate hard currency and increase social and geographic equity and increase rural employment. We present background on Nepal, a statement of our charge, ecommerce alternatives and our conclusions.

Nepalese Background

The Internet has had an uphill struggle in Nepal. A thriving Internet requires complementary telecommunication infrastructure, trained technicians, demanding users, and networking and end user equipment, but these are not abundant in Nepal.

Nepal is between China and India, and has a population of 22 million. Nepalese life expectancy is 55.6 years, adult literacy is 38.7% and per capita annual income is 1,186 US dollars (UNDP, 1998). The United Nations Development Programme computes a national human development index as a function of economic productivity, health care and education in a nation, and Nepal ranked 144th out of 174 countries 1999 (UNDP, 1999).

The situation is exacerbated by heterogeneity within the nation. For example, average life expectancy was 55.8 years in 1996, but it was only 36 years in the Mugu District and 67 in Kathmandu, the capital. (The standard deviation in life expectancy among the 75 districts was 6.2 years). Literacy varies from nearly 90% among the Marwari ethnic group to less than 15% among the Dusadh and Chamar. Brahmins have a life expectancy of 61 years versus 49 years for Muslims, and Brahmin adult literacy is 58% versus 22% among Muslims. Only 15% of homes have electricity in spite of Nepal being an exporter of electric power.

Telephone infrastructure is poor, and concentrated in and around Kathmandu, the capital city. Nepal has a teledensity of just over one line per 100 inhabitants; and there are more than 260,000 on the waiting list. Around two-thirds of the telephones are in the Kathmandu valley which accounts for less than 3 per cent of the population. Kathmandu has a teledensity of 18.2 lines per 100 inhabitants compared with 1.07 in the country as a whole and 0.06 in rural areas (ITU Database, 1999). Twelve of the 75 districts have no direct service, and only 1,535 of the 3,996 Village Development Councils have telephone access.

The Nepalese phone company is state-owned, though there are privatization plans. A tender is planned for domestic fixed wireless connectivity and VSAT licenses are available to ISPs and others; however, as in many developing nations, there is ambivalence about privatization and open competition.[1] Tender schedules have slipped, and the government and telephone company are concerned about the possible loss of revenue.

The Nepalese Internet got off to a later start than most developing nations, with initial UUCP connectivity in 1994, the licensing of ISPs in 1997, and VSAT licenses in 1999. Today there are nine operating ISPs with around 9,000 accounts. Roughly 30% of these are commercial, but there are fewer than 100 leased lines and fixed wireless connections, and many accounts are UUCP email only. Activity is concentrated in Kathmandu. Nepal's late start with the Internet has left it with relatively little business activity. A survey of tourism and export related companies showed only 49% of the companies had email addresses and many fewer Web pages (ITU, 2000). Looking at the Web sites that do exist, one sees further evidence of Nepal's late start on the Internet. They are first generation Web sites -- small, static "electronic brochures."

Our Charge

Our study was conducted by the International Telecommunication Union in cooperation with the Nepalese National Planning Commission. One of the Planning Commission charges was to identify projects to

[1] See Braga, 1999 for a discussion of this problem in developing nations.

facilitate electronic commerce. While the government of a developing nation should investigate and invest in ecommerce, it must do so in the context of its own goals and situation. In a developed nation, ecommerce might be viewed as a means to increased industrial productivity. While this is important everywhere, a developing nation might be more concerned with stemming population flight from rural to urban areas by increasing village productivity to the point where it affords two rather than one meal per day and providing access to news, entertainment, and education. We considered the Nepalese goals of increased social and geographic equity and rural employment along with the desire to generate hard currency profits.

Alternative Directions

Like the proverbial blind men and the elephant, there are many ways to define and categorize ecommerce. Rather than attempt a single, orthogonal taxonomy, we will look at the ecommerce "elephant" in several, overlapping ways, discussing information products, electronic markets, vertical industry portals, extranets, business-consumer enterprises, and ecommerce involving government.

Information products are unique in that selection, transaction, payment and fulfillment may be completed electronically without involving physical infrastructure for warehousing and delivery. Information products would seem attractive in a developing nation like Nepal, where roads, transport, post and delivery facilities are poor. On the other hand, the banking and legal system must provide for electronic payment, and, of course electrical and telecommunication infrastructure must be available and reliable.

In considering information products for export, one should ask what is uniquely Nepalese. What news, literature, music, images, and video content would have a market? Who would be the audience? Nepalese expatriates? English and Hindi speaking Indians? Buddhists? An ecommerce presence could perhaps evolve out of a government sponsored Nepalese culture site on the Internet.

Software and data entry are another form of information product. This can take several forms (Press, 1991, Press, 1993), including transcription and data entry, call center operation, animation and drawing, Web hosting and design, contract programming (on site or remote), and software packages. Of course the Internet merely enables or facilitates such activity – management, marketing and human capital are at its core. The markets for this sort of service are very competitive and crowded, making differentiation difficult. One strategy is to focus effort on areas of current competence. For example, Chilean banking and forestry software was successfully exported because they had developed excellent local systems. Nepal may have expertise in systems for electrical power generation and distribution since they have extensive hydroelectric capacity and are a power exporter.

There would also a domestic market for information products if there were infrastructure in place to deliver them. Information products involving credit, education, news, health, entertainment, and personal communication can be sold in rural and in urban areas if people have access to the Internet at home, work, school or in a telecenter.

Funds transfer is another information service. The Internet is increasingly used by expatriates in developed nations to maintain contact with each other and with their families. Expatriates often send funds home, and a trustworthy mechanism for electronic funds transfer should be provided. The same service is needed to support export business. This should not be seen as a profit opportunity for the government, but as a method of getting hard currency and enhancing quality of life.[2]

Electronic markets are well suited to homogeneous, fungible commodities, several of which come to mind in the Nepalese context: electric power, agricultural inputs, products, and transportation, and handicraft raw materials. Nepal has knowledge of energy markets because of its hydroelectric power industry. We are seeing the emergence of electronic markets for energy, for example, Altranet, www.altranet.com, in developed nations today, and Forrester Research predicts that 17% of US electricity will be traded online by 2004 (Kafka, et al, 2000). Is there a place for an international electronic market for energy in the region? Or, more generically, how can the Internet be used in service of the region's energy suppliers?

Perhaps electronic markets could play a role in rural agriculture by lowering the cost of seed and fertilizer, helping farmers find the best prices for their goods, and finding cheap, reliable transportation to market. An early study along these lines in Pondicherry, India, found that information about something as mundane as bus schedules and the availability of space on a bus can be quite valuable in the rural economy (Press, 1999a). One can imagine a Nepalese "Federal Express" which aggregates goods for transportation, eliminating the need of a farmer to travel with his or her produce to market.

[2] The value of increased connectivity with the Nepalese expatriate community should also be considered in assessing the decision to regulate Internet telephony.

Handicrafts are also significant in Nepal's rural economy, employing an estimated 300,000 people throughout the country (Shahi and Kachhipati, 1999). In urban areas, people usually work full time in handicrafts, whereas it is typically a subsidiary occupation in rural areas. While the contribution of handicraft exports to GDP is only .89 percent (1996/7), it has grown steadily from .08 percent in 1986/7, and handicrafts accounted for 4.17 percent of exports in 1996/7. Might electronic markets for handicraft raw materials and products increase efficiency? As with electric power, these markets could serve the entire region, not only Nepal.

The tourism and trekking industry is a candidate for a vertical portal. The Web site should be comprehensive, providing for selection of transportation to and within Nepal, accommodations, guides, etc. The site would provide descriptions, search and selection tools, and links to competing companies in each of these areas, necessitating the participation of representatives of several industries. As with most ecommerce, the Web site would be only the tip of the iceberg. Payment and fulfillment must also be provided for. Credit cards are the most common payment mechanism for consumer goods on the Internet today, and a means of accepting credit card payment would be necessary. Similarly, systems for international travel, visa and immigration matters, local transportation, and housing would all have to be integrated.

Electronic marketplaces and vertical portals are open, hoping to attract all buyers and sellers, but the Internet is also used to create closed "extranets" to facilitate communication and cooperation between relatively stable business partners. For example, the handicraft industry involves raw material producers, individual artisans, producer and craft-based organizations, marketing and fair-trade organizations, commercial buyers and importers, government customs and export regulators, retail outlets, and warehousing and transportation at every step in the process. Simply connecting the appropriate people in each of these organizations with email would no doubt increase production and logistic efficiency. Providing them with Web sites for querying inventory status, ordering, scheduling, tracking shipments, etc. would provide still greater returns.

Direct Internet sales to export customers are difficult because of logistical problems with rapid, reliable delivery; however, the inefficiencies and markups in the current distribution channels make direct marketing an attractive goal. For example, a Dhaka full pattern shawl begins with Rs 175 for yarn and Rs 275 for the producer's labor, and ultimately sells for Rs 5,250 (Shahi and Kachhipati, 1999). An allo placemat which sells for Rs 300 begins with Rs 15 for material and 7 for labor. Note that the bulk of the export markup is in freight, duty and retail. The Rs 5,250 shawl sells for only Rs 750 domestically and the placemat 48.50.

Direct marketing to consumers would entail a Web site, and it should be complete and professional, enabling the consumer to select or design, order, pay for and track delivery of an item. Timely delivery to customers would entail warehousing and fulfillment centers in target market areas such as North America, Europe and Australia.[3] Government cooperation in streamlining export procedures and lowering duties would also be necessary.

Local and national governments are also involved in commercial transactions, and the government has an opportunity to lead by example in this area. The Internet can be used in the tender and fulfillment process, project management and reporting, in collections and procedures, etc. These can be both government-business and government-consumer transactions, and there are many examples to follow, for example, in local government in India (Press, et al, 1998) or at the national level in the US or Singapore.

Conclusion

In conducting this exercise for Nepal, we were struck by the degree to ecommerce considerations in developed nations were valid in a developing nation. In all cases, the Web site is just the tip of the iceberg – systems for site maintenance and fulfillment are critical as is providing comprehensive one-stop information and the ability to place and pay for orders. Channel conflicts due to disintermediation are as likely for handicrafts as for automobiles. The opportunity for comprehensive customer relationship management is available in Nepal as well as California.

We recommended three projects: a business-consumer site for marketing Buddhist thangka paintings via the Internet, a series of vertically focused workshops bringing together members of the Nepalese IT community and members in industries which may be likely ecommerce candidates, and the establishment of a village-connectivity pilot project along the lines of those in Pondicherry (Press, 1999a, Press, 1999b, Dugger, 2000) and Madhya Pradesh (Loyd, 2000) to explore technology and applications.

[3] The numbers of Internet users in India and China growing rapidly, and more direct shipment may be feasible for reaching those markets.

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