



“E-Services through Post Offices in Bhutan”

**A cooperation project between
Royal Government of Bhutan, Government of
India,
International Telecommunication Union and
Universal Postal Union**

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The Project:

The International Telecommunication Union (ITU), the Universal Postal Union (UPU), the Government of Bhutan and the Government of India have collaborated on a project in Bhutan that brings the benefits of digital technology to the population in rural and remote areas using post offices as the vehicle. A powerful rationale for the project is that the post office, more than any other institution, has a presence in people's lives even in the remote corners of Bhutan. Bhutan, with its difficult terrain and, inadequate communication system, offers the right case for creating appropriate ICT infrastructure for universal access. The project sets the sight to a future of nation-wide digital infrastructure from which various digital services would flow, and would create a modern e-society.

The programme has been conceived as establishing telekiosks within the routine operations of the post offices so that postal employees become the integrate part of the initiatives. As for implementation plan the already existing postal network of Bhutan Post has been taken as the launching pad and main executing agency. Since the backbone of the new technology is the telecommunication system, Bhutan Telecom has been made a partner for the implementation of the project. Together, Bhutan Post and Bhutan Telecom selected 32 post offices that had reasonable postal infrastructure as well as stable telecommunication services and six post offices at remote locations which had no telecom connectivity. Telecom connectivity to these locations has been provided through a VSAT system with technological and financial assistance from India. In addition to computerization of the post offices and internet connectivity, launching of e-post services were envisaged as the vehicle of carrying ICT to remote places. The concept of e-post was to receive e-mails at the post offices and deliver a print out to the addressee. It was envisaged that, when the post offices are connected, the programme will substantially reduce delivery time of mail. A project document was signed in 2002 by Bhutan, ITU and UPU. A Memorandum of Understanding (MoU) was signed by India, Bhutan, ITU and UPU for the connectivity part.

Execution of the Project:

The implementation of the project has been planned in three phases. Locations were chosen based on available infrastructure, and revenue generation potential. 17 post offices were to be connected in the first year, followed by 13 in the second year and 8 in the third year. The programme consisted of equipping the selected post offices with required hardware and software. To begin with the hardware package was computer, scanner and printer with internet connectivity. This was to be coupled with training of the employees of the post offices in both hardware and software aspects of the operations of the systems. For e-post it was envisaged that the Bhutan Post will initiate development of appropriate software for the purpose.

The attached maps show the details of telekiosks made operational in different phases. Map 1 shows the post offices computerized in Phase 1 and 2. There are five post offices that have been computerized in latter years under the Community Information

Centre programme launched by Microsoft Corporation. These post offices were not originally part of the telekiosk project. Map 2 shows the location of 6 post offices connected through VSAT. Map 3 shows the location of ten post offices where computerization programme is underway.

Bhutan Post carried out the training programme for the employees of the post offices. Training programme is regularly conducted twice in a year at Thimphu GPO. Training module consists of both software and also preliminary hardware maintenance.

By December 2003 the full package of the hardware has been delivered and installed in 17 selected post offices. Training of the staff of Bhutan Post has been arranged once in India (at Saharanpur) and another at Thimphu, the capital city of Bhutan. This has been followed by on site and on job training of the staff of the 17 post offices where systems were installed. This has been done mainly by the personnel of the Central office of Bhutan Post at Thimphu; as and when required by the staff at the post offices. By January 2004 all the 17 post offices were equipped with Internet connectivity through DrukNet, the Internet service provider arm of Bhutan Telecom. At the same time, six servers were installed at the General Post Office in Thimphu for inter-post office connectivity. By late 2005 VSAT connectivity became operational. The project funded by India was executed by the Telecommunications Consultants India Limited (TCIL).¹

Assessment of Outcome

The project document as well as the Memorandum of Understanding envisage impact assessment and dissemination of lessons learnt. This exercise was carried out through the following approaches:

1. Visits to a few post offices for on site assessment of the status and progress of the project;
2. Workshop at Thimphu with a number of postmasters from remote areas;
3. A joint meeting with Bhutan Telecom, Bhutan Post, UPU and ITU representatives for assessing the managerial and regulatory issues for sustenance of the project. Bhutan Telecom is the executor of the project at six remote locations where connectivity has been established through VSAT network; and
4. A questionnaire based survey carried out essentially to assess various socio-economic factors that might have affected the performances of the telekiosks.

These modes were complemented with rigorous discussions on several aspects of execution of the programme with the officials of Bhutan Post and Bhutan Telecom.

The following is the brief report:

A. Status of the services offered and accessed:

1. Bhutan Post has installed and adopted the well tested software 'Meghdoot' used by India Post for computerization of counter based services of all its post offices. While this can be hailed as major achievement, it is realized that this stand alone computerization should be upgraded or replaced by appropriate software that will provide effective connectivity among post offices. Tracking and tracing of international EMS and parcels is now available through the use of IPS Light and online tracking system of domestic express, registered and parcel mail is

¹ India has provided six VSAT stations and a hub in Thimphu, solar panels with a capacity of 600 watts and eight days standby battery back up, free access to INSAT transponder for the duration of the project and training and maintenance.

to be soon introduced. International remittances of money are available through collaboration with a private player. Implementation of IFS Light is in test mode. Bhutan Post is also considering the feasibility of introducing Postal Banking services.

2. Bhutan Post has established a separate IT unit at its Head Quarters in Thimphu. The Unit has taken proactive initiatives to develop appropriate software for OTS or Online Tracking System. The software is ready to be installed, and at present in the phase of trial runs in a few post offices.
3. Computerization of post offices has created quite a few new opportunities. Some of these services are digital photo required for various license and permits, several forms for accessing various services and permissions from different government departments, certificates and mark sheets for school results etc. It is quite evident from the visits to post offices that students are the most important beneficiaries of the computerization programme.
4. The post offices provide a number of services such as access to e-post, Internet, fax, telephone, scanning, photographs using digital cameras and photocopying. Fax services are most intensively used for money transfer through post offices. The facility for getting photographs in post offices is very important because in most of the smaller towns in Bhutan this facility is not available. Demand for Internet services is at its nascent stage. Major users are students and personnel from academic institutions. On an average internet use is restricted to about 5 hours in a week, while rarely used in the remote areas. E-post services were initiated with adequate publicity through radio and other print media. Initial success was gradually dampened with the inroads of mobile telephones. Villagers have shown preference for direct voice communication to waiting for e-post.
5. Till 2004 the base level situation was that Bhutan Post itself had very rudimentary physical and human resource based ICT infrastructure. Hence the unreached was not only the people from rural and remote areas, but also the Bhutan Post itself. In 2008 the discernible change is that the postmasters, who were not comfortable with the new equipment, and were sceptical about the usefulness of this unnecessary burden, have become computer literate, so much so that they not only demand more services to be computerized, they fear how helpless they would become in case of any break-down.
6. The post masters have complaints about the slow connectivity of dial-up internet connection. Four years back only service they were appreciative of was using Fax for money order. Now they realize that because of slow connectivity much of the revenue from Fax money order actually goes to telephone bills. They realize that a dedicated infrastructure would have helped higher revenue realization.
7. The VSAT connectivity to six remote and high altitude locations is the most challenging part of the project. It is a daunting task that the project has performed by mobilizing the financial resources, technological inputs that required operation of the equipment based on solar power, procuring and transporting hardware to places that are normally unreachable, and to involve agencies from different countries to contribute to the project.
8. The enormity of the task of setting up VSAT connectivity in 6 locations can be guessed from the following facts:

The expression “remote location” acquires a whole new, deeper meaning when taken in the Bhutanese context. Six of the remote locations are in the northern and north-western part of Bhutan. All of them are at an altitude ranging from 3000 to 4500 meters. The population of the villages, dependent on subsistence farming and animal husbandry, ranges from 1000 to 3000. These villages used to be served by “postal runners” -a one-way trip taking anywhere between three to seven days on foot.

Implementation of the project in these areas presents a major logistical challenge. It takes a 7 day walk to reach Lunana, part of the glacial backcountry of Bhutan. This is by far the most difficult site to reach. The route crosses eight major passes - three above 5300 meters. There are two possible routes taking similar time, but both involve crossing passes over 5000 meters.

Sombekha in the Western region of Bhutan is about 4 to 5 days walk from the nearest road-head. Shenghar Lauri is about 50 km from the nearest road-head and it takes 2-3 days of walking through a very harsh mountainous terrain. Laya located in the extreme North of Bhutan at about 4000 meters altitude and it takes about 3 to 4 days of trekking from the nearest road head named Tashithang.

While being at the extreme, all the other locations equally involve walking of several days over harsh mountain terrain. The routes also criss cross fast flowing streams where leeches and swift current present constant challenge. These locations also pose complex logistical problems in transporting equipment – for example it has to be sized and should not weigh more than 40 kgs so that yaks can carry the load. To transport the equipment to Merak, Bhutan Telecom had to hire 112 people and 26 horses to carry the equipment over steep terrain for two days from Phongmey, the nearest road-head. Eventually Telecom officials decided to hire a helicopter for about a week to transport the equipment.

VSAT equipment was installed at all the locations by September 2005 with the exception of Lunana. While equipment has already reached Lunana, it could not be installed because of harsh weather till July 2006. Unfortunately, the signal was lost a few days after installation and could not be regained. The satellite equipment was retrieved, but the solar panels and batteries were left behind for use by the local community. The project was formally inaugurated on 22 March 2006. Bhutan Post also officially launched its e-post services in these remote areas.

9. Five out of the six VSAT locations are functioning with obvious and expected hiccups because of hostile climatic conditions. The all mountainous topography weather and snow conditions and limited road network mean that restoration of services can take weeks if not months, during certain times of the year. With all these constraints it is a phenomenal achievement that the five locations are functioning with only one location reporting 55 days of outage in a year. The one location where the initiative failed was in Lunana, the remotest of the locations, where the station has to be closed down because of the unfavourable climatic conditions.

B. Work culture:

Most enduring effect of the project with Bhutan post was possibly in the work culture of the organisation. The project has inculcated a sense of commitment of the staff at Bhutan Post and also at the post offices. It also has infused the culture of innovation while dealing with various problems that have been encountered in the process of execution and also ensuring smooth services to the users. Following are a few most visible examples.

Commitment

1. Bhutan Post has created a separate IT unit to deal with the programme of computerisation of the post office services. The unit is also responsible for execution, monitoring and trouble shooting of the project. The unit has only two regular staffs and helped by a United Nations Volunteer from Japan. They attend to the hardware and software related complaints from post offices. They are also responsible for imparting training to the post office personnel. This they do on site travelling from one post office to another covering difficult terrain, many a times walking days together. In fact for post office at remote locations they had to carry the equipments on their backs and walked for days for destination post office.
2. In the absence of expertise that can be outsourced, the staffs at the IT unit have learnt maintenance and repairing jobs by trial and error with rudimentary initial knowledge. Equipments that cannot be repaired on site are brought at Bhutan Post office at Thimphu and repaired there. Equipments that are beyond repairing are not thrown away. Efforts are made to reuse many of the components for other systems under maintenance.
3. At the post office level in many occasions offices are opened till late hours, and on weekly holidays to attend the customers who want to access e-mail or other internet services.
4. It is probably this commitment that had encouraged the Microsoft initiated Community Information Centre programme to choose a few post offices (as shown in the Map 1) for execution of their programme.

Innovation

1. The culture of innovation is reflected in the initiatives to make the system functional in most unfavourable conditions. Most glaring example is the fact that VSAT connections are functional at five out of six locations. The local people are using it for telephone and in some cases for internet access. These remote set up stood the test of efficacy during the recent first general election in Bhutan when the results from this locations were communicated to all other places using the set-up. Because of the adverse climatic conditions system break-down is much more frequent, and help from head quarter is always a matter of few days and some times few weeks. The staffs in these stations, however, manage to run the system by make shift and ad-hoc means till the help arrives.
2. The programme to establish the connectivity among post offices through OTS software required innovative mind. The software was customised for this purpose with the help of local firm. The installation of the software brought in new set of

problems. The dial-up connectivity is not only slow, it become non-functional while transmitting large volume of data. At the same time the traffic is not large enough to sustain broad band connection. The innovative solution of the problem has been achieved by developing protocol using UCP, UUCP in UNIX that will transmit data in packets. The e-post software which was initially developed has been further refined to send attachments along with messages.

C. Road blocks

As it happens always in such cases, the project faces quite a few road blocks. The ICT services through Telekiosk are giving reasonably good business to the post offices that are located closer to urban areas or having educational institutions around. In many cases private enterprises have come up and they are providing similar services at a lesser price. Post offices, due to higher organisational costs, find it difficult to compete with private service provider. Where ever there is higher demand, there is also demand for faster connectivity. These post offices strongly feel the need for broad band connectivity. We have already mentioned the competition that e-post service faces vis-a-vis mobile telephones.

D. Issues

The road blocks are external to the project, and in many cases they are not foreseeable. Such situations require rethinking and revamping cost, price and modes of services. There are issues that are internal to the system and the project. In case of this project the singular most important issue is the maintenance, repairing and replacement of the equipments. The problem has to be addressed keeping in mind the facts that once computerised, any break-down for a few days will cause collapse of the system. At present the problem is addressed on ad-hoc basis. There has to be planned resource mobilisation for this purpose.

E. Challenges

As we have stated at the outset, the project has achieved the goal of reaching the unreached. In this case it was essentially through creating ICT infrastructure in post offices of Bhutan. The initiation to a new era of computerisation has thrown new challenges to Bhutan Post. Our questionnaire based survey has shown that in many places there are people travelling 30kms to access postal services, send money order or sometime even to make a telephone call. How do we reach them to reduce the distance of access points? The project had targeted 38 post offices and managed to establish reasonable ICT infrastructure. The Bhutan Post operates in a four tier structure, at the top there are two General Post Offices (GPOs), followed by 27 post offices, under which there are 10 Agency Post Offices (APOs). At the bottom there are 70 Community Mail Offices (CMOs). The project has carried ICT infrastructure to the level of APOs. The challenge is to reach 70 CMOs, a task that will not only create a formidable ICT infrastructure across the structure of Bhutan Post, it will also make in roads to the social and economic life of the rural and remote communities of Bhutan.

Conclusions:

The core of any developmental project, like the one discussed above, is the expected gains or achievements. In most of the cases such projects leave behind many unaccounted and intangible gains, the long term effect of which might outweigh the projected gains. This happens because such projects actually work as a catalyst and create cascading effects on many social, cultural and economic practices. The Bhutan telekiosk project is a glaring example of the same.

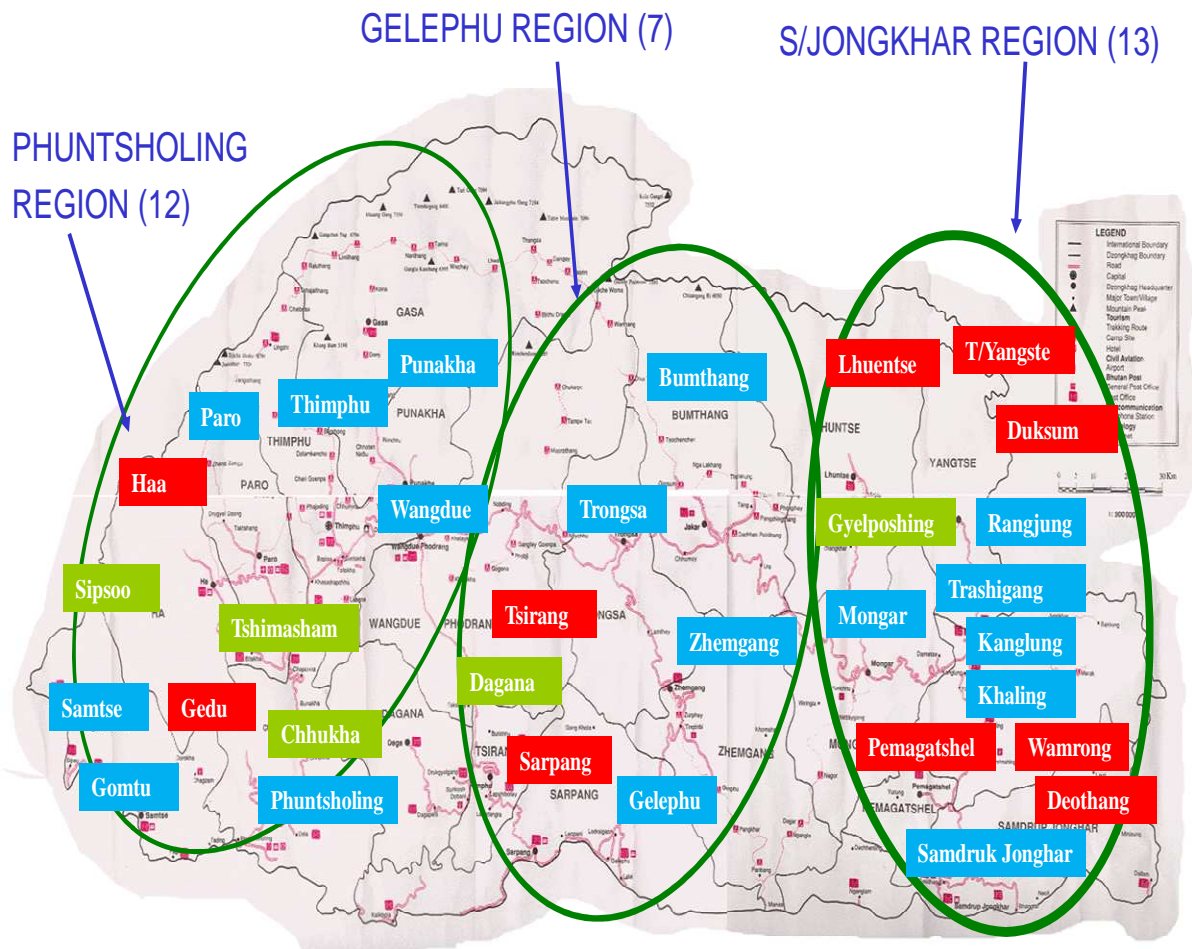
This project has led to huge gains for Bhutan Post as well as the populace at large. The majority of the people had their first access to ICT through only the post offices. Even now, when some private internet cafes have come up in some of the larger towns, post offices remain the sole providers of access to ICT. One striking example of this was the immediate availability of election results from the five remote locations which in pre-project days would have taken 3 to 7 days to become available. At some places, people had to travel to another town to get their photograph required for so many purposes. Now this facility is available in many of the post offices through digital cameras.

The most impressive gains have been made by Bhutan Post, the medium through which the ICT access has been provided. In the process of delivering ICT access to the community, Bhutan Post has transformed itself from a traditional organization where all operations were performed manually into a technology driven organization which is using all available tools to improve the quality of its existing services and offer new value added services. Most importantly, the basic technological platform is now available to Bhutan Post to provide many new services in the future.

In summary, the Bhutan experience presents new ideas, new problems, and new objectives. Carrying ICT from post offices to Community Mail Offices at the remote areas is probably that new beginning of the Bhutan project, and exploring ways of increasing the range of e-Government and related services to the people in those remote and underserved communities.

Appendix: Maps

Map 1: Computerized post offices 2008



- 17 post offices in the first phase
- 10 post offices in the second phase
- 5 post offices computerised under CIC programme

Map 3: Post offices to be computerised

