An Extended Sharing Model to Provide ICT Services to the Rural Poor

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ABSTRACT

The shared access model through telecentres, phone kiosks or multiple community centres has become the standard to cope with financial problems in providing ICT service to the poor in rural areas of many developing countries. By an investigation into the Grameen Village Phone program in Bangladesh from a sharing perspective, this study suggests an extended sharing model. Sharing can be applied not only at the access points, but also can be applied at all stages in the process of ICT services provision, including function sharing and cost sharing at each function. This study also proposes an action framework towards implementation of the extended sharing model for ICT projects for the poor.

Keywords: *Pro-poor ICT, ICT for development, shared access model, sharing mechanism, mobile phone service, Grameen Village Phone.*

INTRODUCTION

The potential role of information and communication technology (ICT) in poverty reduction is now rather clear. ICT can benefit the poor in two ways. Firstly, the technology connects the poor to information and knowledge sources helpful for improvement of their living conditions. Secondly, the development of ICT production and services can offer job and income opportunities to the poor. Moreover, the ICT network effect creates social capital, which benefits not only the poor, but also the whole society (see Torero & von Braun, 2006). Many studies (e.g. Harris 2004, ZEF 2002) consider ICT as a part of poverty in terms of a digital divide. The digital divide not only reflects the technical gap, but also mirrors other divides, including income, health-care, and social position. With the rapid development of ICT at present, ICT is a challenge of poverty, but also provides a promising way for the poor to get out of the deprivation cycle.

Much effort has been made to bring ICT to the poor in rural areas in developing countries. The pro-poor ICT programs are diversified, involving different agents such as international organizations, governments, NGOs (non-governmental organizations), and private enterprises. They provide different ICT services, from fixed phones to mobile phone services, from e-mail and browsing services to more sophisticated information and knowledge services related to health care, education. They are also organized under different provision models[1]. Many of them have not been successful, not meeting the social-economic goals of the communities (Heeks 2005). Many others, though, could generate some goodwill of the technologies, stopped after the pilot period (Robinson 1998, Weigel & Waldburger 2004) without any replication or scaling up for realistic and wide effect of ICT to improve the lives of billions of the rural poor all around the world. These failures are attributed to the complexity of pro-poor ICT activities.

Against this situation, sustainability, especially financial sustainability has become an attractive issue of pro-poor ICT projects (Kumar 2004, Proenza 2001, Tschang 2002)[2]. Financial obstacles in providing ICT to the poor involve the problems of financial source sustainability and service

affordability to the targeted low-income customers in rural areas (see Tschang et al. 2002). The projects conducted by international agencies and charitable organizations are normally one-off projects. Like any other charitable operation, these activities focused more on service provision than financial matters. As a result, they fail to replicate because the sources of financing are obviously not unlimited. In this context, a business model can offer a sustainable pro-poor ICT model in which, profit from service supply can be reinvested for continuously expansive operations (Bailur 2007, Whyte 1999). The Bottom of Pyramid (BOP) model (Prahalad & Hammond 2002) is a systematic account of private enterprises doing business with the poor, and success. However, because of many difficulties of doing business with the poor, most enterprises are still skeptical and reluctant to take risk in the new market segment. They usually need some kinds of incentives from, and cooperation with public and civil sectors.

These facts and arguments suggest that defining investors for pro-poor ICT service is at best of secondary importance. The most important thing is the organization of the ICT service supply in a financially effective way, to ensure the reinvestment source and affordable fees for the services to the poor. This is crucial to all pro-poor ICT projects, regardless of who the investors are. The shared access model has been recognized as the standard organization of pro-poor ICT projects (Moshapo & Hanrahan 2004). By providing shared access to ICT facilities/devices within easy reach of community members through telecentres, kiosks, multiple community centres, and phone operators[3], the model makes information and communication services affordable and accessible to many poor people, who could not otherwise afford a phone. This suggests a deeper investigation into the sharing mechanism for pro-poor ICT services provision.

This study searches for the opportunity to expand the sharing mechanism in pro-poor ICT programs in rural areas. Towards this purpose, it examines the successful Grameen Village Phone program in Bangladesh, using value chain analysis. This is a secondary study based on data and materials in the reports and other studies of the Village Phone[4]. The study contributes theoretically with an extended sharing model applied to the ICT provision to the poor, and practically by the proposed framework of actions which can be a good guide for pro-poor ICT practitioners.

The article is organized as follows. In the next section, the shared access model is described as the base for an extended sharing model of ICT provision to the rural poor. Section 3 investigates the Grameen Village Phone program in Bangladesh under the sharing perspective. An action framework towards implementation of the extended sharing model to build pro-poor ICT programs is introduced in Section 4, followed by a conclusion.

SHARED ACCESS MODEL

The shared access model of mobile phone service originated from the telecentre model in contrast to the private access one. The telecentre model has become the solution adopted by International Telecommunications Union (ITU) since the early 1980s for the Universal Access mission, providing ICT services (originally telephone) to all people, especially the poor people in rural areas in developing countries (Benjamin 2000).

Focusing on the financial problems of ICT projects, we use a value chain (Porter 1985) to illustrate and analyze the shared access model. The value chain breaks a complete work into component value-adding activities. The value of the work depends on that of each activity developed through the chain of operation. This framework has become a powerful tool for strategic planning in many organizations for nearly two decades. By dealing with each activity in the chain, the value chain framework aims to maximize value creation while minimizing costs.

The primary value chain of mobile phone service is adopted from Anderson and Williams (2004) and introduced in Figure 1. The service provision consists of four main components: Network elements, customer support service, billing, and devices. The provision program is financially feasible if the total cost of all the component activities is less than the value at which the end users evaluate the service. In a traditional service provision model, the network operator performs most

of the activities, including investing in access network infrastructures, providing customer supported services, and arranging billing systems. The end user buys a terminal device (a mobile phone) to use phone services and pays the total cost of the services. A value chain with relatively independent activities, however, suggests that many participants can simultaneously take part to do one or more activities in the phone service provision.

The shared access model emerges by breaking down the fourth step in the value chain. In the shared access model, mobile phone service reaches end customers through an intermediate device provider. Instead of each end user owning a handset, a group of them shares one. End users use the shared phone for calling, and pay only the service plus a small fee for the device usage. The device providers can be organized in different ways such as telecentres, phone shops, kiosks or multiple community centres. The argument under this model is that by removing the barrier of owning a telephone or computer, ICT service becomes cheaper, and thus affordable to the poor living in many remote and rural areas in developing countries.

We reason that if this sharing mechanism can be applied at the device provider points to reduce the cost of the service for the poor, it could be applied to other stages in the value chain of the service as well, for the same end. Moreover, the community among which the cost is shared can be wider, rather than limited to only poor end users. Considering the small cost of the terminal device in comparison with other investments and costs in the value chain, and considering the low income of sharing poor customers in relation to the income of other ICT service users, this application would be a very promising solution to the financial problems of pro-poor ICT service programs.

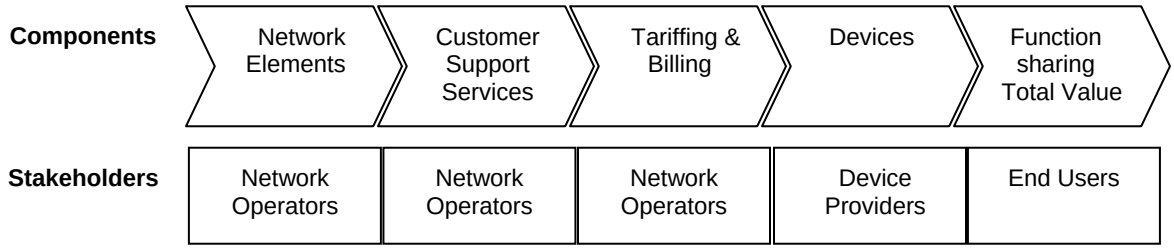

Figure 1: *Value chain of mobile phone service and traditional provision model*
Source: Adopted from Anderson and Williams (2004)

In the next part, we examine the sharing mechanism in the Grameen Village Phone program to see how useful it is in connecting rural Bangladesh to information and knowledge sources, while at the same time generating profit to the network and service operators. We use the value chain of mobile phone services for analysis.

SHARING MECHANISM IN GRAMEEN VILLAGE PHONE PROGRAM

An overview of the Grameen Village Phone program

The Village Phone (VP) concept was initiated by entrepreneur Iqbal Z Quadir and Mohammad Yunus, the founder of Grameen Bank, a non-profit micro-credit organization in Bangladesh. Quadir sees a business chance in providing telephone service to a large untapped segment of customers in the vast rural areas in Bangladesh, while Yunus recognizes the feasibility of bringing ICT to the poor, giving them a tool to get out of their deprivation situation. The VP program is based on the combination of established principles and financial system of micro-credit finance with the new telephony business. Through this model, it is expected that all stakeholders can gain. In early 1997, the program started its operations to provide mobile phone services to the poor Bangladeshis.

There are four main partners in the VP program. GrameenPhone, a for-profit joint venture[5], provides telecom network infrastructure and sells airtime in bulk, with a 50% discount to Grameen Telecom. Grameen Telecom, a not-for-profit company, which is a member of Grameen Bank group, sells mobile phone services to VP operators who own the handsets. Grameen Bank makes loans to VP operators, all of whom are women, for their ownership of the phone, and collects phone bills from them to send to Grameen Telecom. Finally, the VP operators, as micro-entrepreneurs, receive loans from Grameen Bank, buy the phone services from Grameen Telecom, and then resell the services to other local villagers for a fee. The end users pay VP services the full 100% market price, in which 50% of the price is for airtime of GrameenPhone, 15% for services of Grameen Telecom and Grameen Bank (each gets 7.5%), and the other 35% for retailing services of VP operators (Alauddin 2004, Knight-Jone 2005, Molina 2006). Among these four parties, Grameen Telecom takes on the key role of linking and organizing the VP service operation. Figure 2 describes the partnership and operations of the Grameen VP.

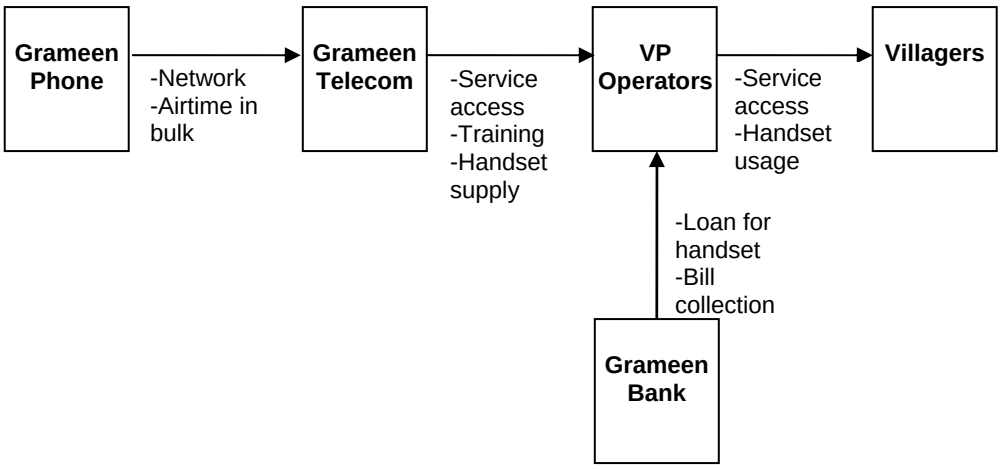

Figure 2: *Grameen Village Phone operation*

Since starting operation in 1997, VP network has grown tremendously. By the end of 2006, Grameen Bank provided the equivalent of USD133 in loans to each of the VP operators, who are selected among Grameen Bank's borrowers, to obtain cell phones for reselling phone service to other villagers. VP has penetrated 50,000 villages in 440 upazilas (sub-districts), covering over 90% of the whole population in rural Bangladesh. An average of 7,000 new subscriptions was added each month in 2006, and the total subscriptions reached 280,000 by the end of 2006, which means about 20 million poor people were connected. The revenue that GrameenPhone gets from VP program increases with the expansion of the network. At the end of 2006, the revenue reached USD29 million, which accounted for about 16% of the total revenue of GrameenPhone (GrameenPhone 2006).

Many studies have proved the significant positive social and economic impacts of the VP program on the poor in Bangladesh (Aminuzzaman et al. 2003, Bayes et al. 1999, Bayes 2000, Chowdhuri 2001, Cohen 2001, OECD 2004, Richardson et.al. 2000, Stanley 2005). From the economic aspect, VPs are good sources of income to VP operators, estimated at USD2 per day (Unicef reported in 2004 that 36% of Bangladesh's 140 million people still live on less than a dollar a day (Unicef 2008)). For phone users, VPs provide market information and knowledge fruitful to their occupations for further financial gain. The high VP customer surplus (calculated by Bayes et al. 1999 and Richardson et.al. 2000) proves VP to be a cheaper and more convenient communication tool for rural people, in comparison with the costs of traditional individual transportation to reach the information sources, if those sources can be reached at all.

From the social aspect, the VP also has had a remarkable effect on the beneficiaries. In rural Bangladesh, owning a VP itself bears the mark of social prestige and honor, which is not only because of earned income (Aminuzzaman et al. 2003). Since all VP operators are women, this effect is especially meaningful in a country with strict gender discrimination like Bangladesh. VPs widen the social networks among the rural villagers, and are the links connecting villagers with their family members working far from home. More importantly, connecting the poor to a wider society, the VP has broken the isolation of many rural villages in Bangladesh. This, on one hand enables them to voice out for their ideas, while on the other hand, builds social capital, which will contribute much to the development of the whole country.

Sharing as a key success factor in Grameen Village Phone

Grameen Village phone is widely cited as a successful shared access or shared use ICT provision model (See Caspary & O'connor 2003). In fact, in its operations through cooperation among four partners, there is much more sharing than just sharing of mobile handsets with VP operators. Extended sharing makes the service not only affordable but also feasible for the poor in rural Bangladesh. Following the value chain analysis, the sharing of service provision in VP program is illustrated in Figure 3.

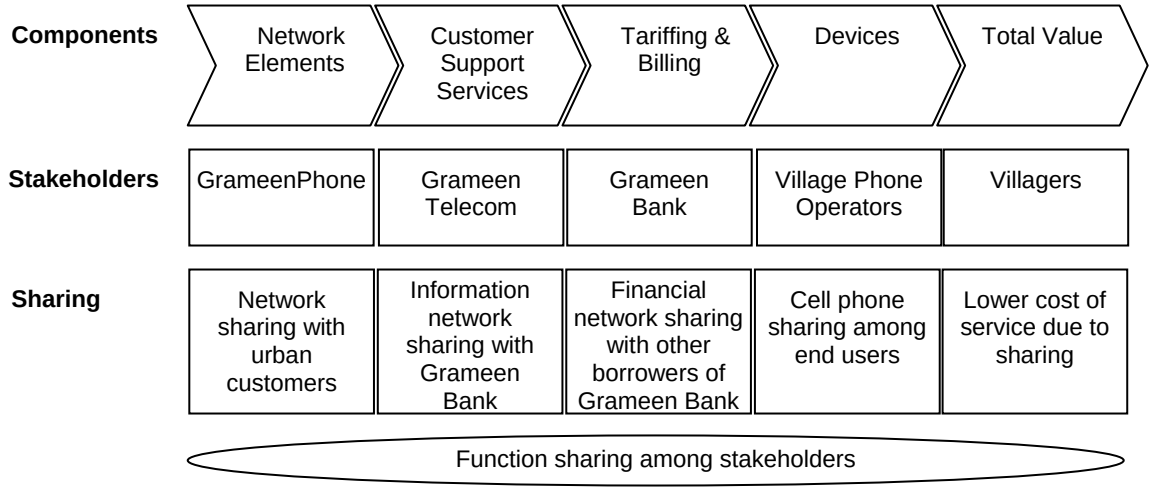

Figure 3: *Extended Sharing in Grameen Village Phone*

Sharing network with urban customers

GrameenPhone was known first as a telecom business, before as a pro-poor service provider. Although poor end users of GrameenPhone phone services can by many times outnumber urban customers, the revenue that the company gets from the former accounts for less than one fourth of that from the later[6]. The real profit from the rural customer segment is even lower considering the 50% discount in airtime price to them. GrameenPhone itself can serve urban customers and make profits, but it cannot manage to provide phone service to the rural areas in Bangladesh on its own, let alone to create a profit.

For that reason, although constrained by the agreements within the alliance, GrameenPhone invests in the network and organizes the service first to serve its mainly urban customers around the country. In 2006, GrameenPhone had the widest network among 6 mobile telephone providers in Bangladesh. The company owns 6,151 base stations, covering 95% of the population in 440 upazilas of 61 districts of the country (GrameenPhone 2006). Owing to the technical expertise and

business experience of Telenor, GrameenPhone can come up with innovative network solutions for even offshore districts of Bangladesh. It is clear that the poor customers benefit from that network investment and governance. If the company just provides services to the poor in rural areas, they would likely fail in cost and revenue balance. If they limited their market to urban customers, they might not be as successful as they had been. However, when they decided to serve the urban as well as the poor rural customers, the company could share the network investments. The network sharing with urban customers is the first step of sharing in the Grameen Village Phone program.

Sharing the credit system with other Grameen Bank customers

One unique solution of the Grameen VP program to cope with the problem of handset investment, which is too expensive for the poor in rural Bangladesh, is to provide loans to some villagers for them to become VP operators. VP operators buy the handsets and supply phone services to other locals. In the program, Grameen Bank is the micro credit provider. The bank takes the responsibility for credit worthiness assessments, decisions on whom (among Grameen Bank's borrowers) will be getting the funding, making credit agreements, as well as examining the loan operation processes and collecting dues.

For any organization, all these tasks are complex, difficult and costly. They require a long-term working involvement with the poor to build up a deep knowledge of their needs. Grameen Bank can afford to undertake the tasks because it has been a micro credit provider, a very successful one, for poor Bangladeshis for over 20 years. It has a credit worthiness database of villagers, and a wide financial network among them. At the end of 2006, the bank had 2,399 branches, providing services in 76,848 villages, and covering more than 91% of the total villages in Bangladesh (GrameenPhone 2006). In fact, for Grameen Bank, the work in VP is essentially an addition to its present work, thus not costing much. VP benefits greatly from the shared financial network of Grameen Bank, which is the second factor making mobile phone services cheaper in the VP program.

Sharing the user monitoring and planning system

The third aspect of sharing involves the operation of Grameen Telecom. In the VP program, Grameen Telecom is the organizer, linking all participants involved and ensuring an efficient service network. To GrameenPhone, it is Grameen Telecom who is the direct customer paying for the airtime. To VP operators, Grameen Telecom is the service supplier, not GrameenPhone. Grameen Telecom provides training and other support services. It supplies VP operators with cell phones, monitors their reselling operations and organizes strategic planning for further development of the VP system. These tasks on one hand require business and technical expertise, and on the other hand demand knowledge of the poor customers scattered in all corners of Bangladesh. Fortunately, Grameen Telecom has the ability to perform these tasks. As a member of the Grameen Bank family, it has much knowledge and experience of working with the poor. Moreover, because of the close link with Grameen Bank, the company is strongly supported by the bank in terms of information, both operational and financial, thus it can easily manage the VP operator system effectively. This is the third step lowering down the price of the VP service.

Sharing mobile phone handsets

Finally, there is sharing of ICT terminal devices. The VP operators obtain the loans from Grameen Bank for ownership of the handsets, then rent them to other villagers for a fee. This VP operator system not only makes the initial investment in handsets unnecessary for end users, but also reduces costs of training and support services provided by Grameen Telecom. This is the final step lowering the cost of the VP service.

In the Grameen VP system, four partners combine their efforts, and one takes the role of the coordinator of the operation process. Each partner has strengths and objectives. Under a reasonable organization plan, these strengths complement one another well for smooth and efficient operation of the program, while each partner still attains its own objectives.

The sharing is done widely in the VP business model. The four partners first share the activities in the value chain of the mobile telephone service. Then through their duties, they allow further sharing with their own system based on their strengths and capabilities. In this view, the sharing in the VP program is twofold, including function sharing among partners, and cost sharing in each function performed by each partner in the program. The extended sharing mechanism is another unique feature of VP, adding to many well-known unique features of the program. In Richardson et.al. (2000) and Alauddin's (2004) words, it is the fifth "first" (innovative characteristic) after the four "firsts" that have long been associated with the name of Village Phone.

Grameen VP now still has to face many problems. A big one is the connection problem with the national fixed line network owned by the state owned company, BTTB- Bangladesh Telegraph and Telephone Board[7] (Sullivan 2007). This connection problem suggests that the VP program can be even more successful if BTTB becomes a VP partner, allowing more extensive sharing in the process of phone service provision to the poor.

In spite of these problems, VP is well known for its success in connecting millions of poor Bangladeshis to the knowledge and information network, and one major reason for this outstanding result is the sharing mechanism in VP. Only by an extensive and complete sharing, can the VP service be feasible and affordable to the poor in rural Bangladesh who have never seen a cell phone before, while still yielding profits for service providers.

TOWARDS THE IMPLEMENTATION OF AN EXTENDED SHARING MODEL FOR PRO-POOR ICT PROGRAMS

The preceding analysis indicates the effectiveness of sharing mechanism in the Village Phone program. There are sill worries about whether or not such a successful program can be replicated anywhere else, in a different economic, social and cultural context. In this section, we propose an action framework to build an extended sharing model in pro-poor ICT programs. The five principles in the framework rooted from the analysis of a value chain, the sharing mechanism, and the investigated case study.

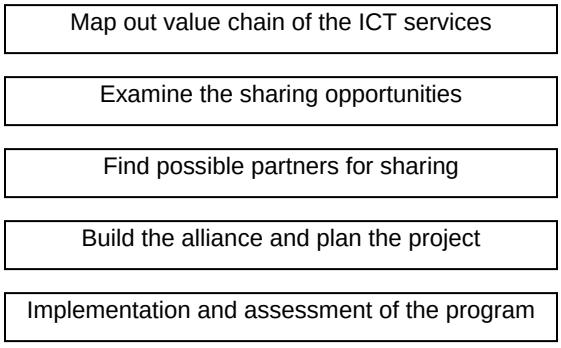

Figure 4. *An action framework to implement extended sharing model to build pro-poor ICT projects*

Map out the value chain of the ICT service

This is the first important principle in building an extended sharing model for pro-poor ICT provision. Breaking down the value chain of ICT services will reveal a clear picture of all the necessary functions, activities, and the links among them for complete services provision.

The choice of suitable ICTs for the poor is also a problem, which is outside the focus of this article. Many newly emerging ICT services are sophisticated, such as web-value-added services, integrating

many different technologies and sub-services. It is sometimes difficult to understand the value chain. This, thus, requires a deep investigation into the nature of the services.

Examine the sharing opportunities

After value chains of ICT services are mapped out, sharing opportunities are examined. The sharing should be investigated at two levels: function sharing first, and then cost sharing for each function. Because of the difficulties of ICT supply to the poor living in rural areas of developing countries, normally partnerships are necessary. It should be noted, however, that fewer partners means easier governance and lower overhead costs. Sometimes, the cost of sharing can be higher than that of not doing so. The relation of the functions and activities is worth paying attention to, since related functions can be covered by the same partner in the alliance later. Sharing opportunities can change depending on the economic and social conditions of the targeted community, and according to the characteristics of a specific ICT.

In the VP program, when entrepreneur Quadir came up with the idea of a profitable company to provide telecom services in Bangladesh, he also understood that there were many necessary "bricks" that he had to find, in order to make his idea real and sustainable. Sullivan (2007) described in detail in his book the long process Quadir had passed to find all the bricks: first, the shared business model of phone provision to the poor, which was suggested by the dish-wallahs model in Delhi[8]; second, the way to approach the Bangladesh government for a supply license, considering the restrictions on phone business in the country; third, the human network to make the service provision feasible, to cope with the underdeveloped infrastructure in Bangladesh, especially in rural areas; fourth, financial brick; and finally the technical know-how brick. Clearly, if Quadir had not broken down the service value chain into relatively independent tasks, he might not have found the sharing opportunities that would best integrate his framework. Complexities embedded in ICT service supply to poor rural customers in developing countries result in few organizations (if any) able and willing to lay out all the bricks to build a house.

Find possible partners for sharing

The choice of potential partners in a future pro-poor ICT program should consider two factors: motivation and capability. An organization finds its motivation to participate in a pro-poor ICT program if the benefit from that participation supports its objectives, directly or indirectly. Its capability is considered according to the needed functions mapped out in the value chain of the service. The capacities can be technical or social. They can be in presence (for example, a network operator has an established ICT network throughout the country) or not in presence but available when necessary. The partners should complement one another in the capabilities. The potential partners can be governmental, international agencies, NGOs or private businesses, both small domestic and multinational enterprises.

The public and civil organizations normally are motivated in supplying ICT service for poverty reduction in rural areas, but they are limited in technological and managerial capabilities. An enterprise often owns technology and business expertise, but lacks knowledge of poor customers and in many cases, lacks motivation to participate a pro-poor ICT program due to high risk and low profitability. The combination of development organizations and businesses, thus, is likely suitable for a pro-poor ICT program. It should also be noted that enterprises pursue real profit, but they pursue different strategies as well, such as reputation of activeness in development or larger influence in a wider market for profit in the future. The organizers should always understand these points for flexible choice of partnership to build an alliance.

We see an ideal combination among the four partners in the Grameen VP, which seems to be simple enough. However, entrepreneur Quadir spent years to find this combination. Quadir first saw the profit opportunity of ICT business in Bangladesh, but this did not persuade Grameen Bank. As Yunus said "I was asking (Quadir) if it is possible to provide telephone service in the rural areas, can it be

made cheap enough for the poor to use it (phone service)?" (Sullivan 2007, p. 39). In looking for a foreign telecom partner to solve the financial and technical matters, Quadir knocked on many doors. Finally, he came to the Norwegian state-owned company, Telenor, whose objectives fit in the project. Norway's government has interest in the development of Bangladesh, and at the same time, the country is leading the world in telecommunications (Sullivan 2007, Chapter 4). Complement is the core for partner combination.

Build the sharing alliance and plan the project

A potential participant becomes a real partner of an alliance in a pro-poor ICT program after an agreement is reached. A practical and detailed operation plan should be developed. In the alliance, different functions of different partners will complement one another. The strong cooperation among partners will make the provision of the ICT service feasible and efficient.

It would be good to bind tightly the responsibilities and interests of each partner, enhance the mutual benefit dependency among all the partners in the ICT program, but at the same time ensure their autonomy for an effective sharing mechanism. Grameen VP dealt with this matter by the establishment of the joint venture, GrameenPhone, between Telenor and Grameen Telecom as the representative of Grameen Bank. Each partner in Grameen VP needs the participation of the others to complete the work and reach objectives, while still maintaining the autonomy to promote his strengths. This autonomy in operation leads to innovations in the implementation of the program. The alliance, thus, is efficient and sustainable.

Implementation and assessment of the program

In implementing ICT service provision to the poor following the sharing mechanism, it is necessary to monitor and assess for the efficiency of the alliance's operation. In the case of Grameen VP, the alliance has changed through the operation process. The stake of Telenor in GrameenPhone has increased from 51% in 1997 to 68% in 2006. Telenor also showed its stronger role in the technology and connection innovations. With the change of Bangladesh's economy, the development of telecommunications technology, and the downward trend in telecom equipment and service prices, in the future we might witness other changes in the program.

To avoid high costs and failure, a pilot project can be conducted first. Later, based on the results of the project, scaling can be done for further impacts of ICTs among the poor in remote and rural areas.

CONCLUSION

Observing the success of the Grameen Village Phone, some analyses consider the difficulty to replicate the program as a complete package, since certain conditions in the program may be unavailable in other contexts (Richardson et.al. 2000). Examples among these conditions are the high density of population in rural Bangladesh, the high migration rate of rural labor to cities and overseas, and the reputation of Grameen Bank in Bangladesh. However, if we look at the Village Phone program through the lens of a sharing mechanism, the same success can be possible in rural areas in other developing countries.

Accepting the sharing mechanism, there are still challenges to overcome to develop the right extended sharing models for ICT provision to the poor, depending on the specific economic, social and political environment. The proposed framework is helpful for the model building process. However, for real effective results, there are requirements, including a deep knowledge of the principles of sharing mechanism, an understanding about the nature of the technology, characteristics of targeted customers, and an overview of the social-political conditions. In addition, it should always be noted that financial sustainability is only one aspect of sustainability of ICT pro-poor projects (social and political aspects (Bailur 2006) should be considered as well). Above all, the most important is the persistent objective of poverty reduction through ICT provision to the poor.

This study aims at a practical action framework applying the extended sharing mechanism to build pro-poor ICT programs. The study, however, has weaknesses in that it is secondary work, using other studies and documentation for case study investigation, which limits the sources and validation of information. Moreover, as being indicated, the pro-poor ICT projects that address social and economic problems are fundamentally complex, the proposed principles are more suggestive than concrete. For a completed practical framework, further study should be done.

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ENDNOTES

[1] Pigato (2001) provides an overview of different ICT programs/models for poverty reduction in sub- Saharan Africa and South Asia. See also Murray et.al. (2002).

[2] Bailur (2007) reviews three dimensions of sustainability, including social, political and financial dimensions. Most concern so far focuses on the two former, but recently, financial sustainability appears to be very important (Kumar 2004, Proenza 2001, Tschang 2002). Using Proenza's (2001) words, the failure to ensure "financial viability" of pro-poor ICT projects will finally leads to failure of "operational viability".

[3] See Caspary and O'Connor (2003), and Benjamin (2000), for examples of the shared access model in pro-poor ICT projects.

[4] The studies on Grameen Village Phone can be divided into two main groups. The first group focuses on assessing the social and economic impacts of the program on the rural Bangladesh (Aminuzzaman et al., 2003, Bayes et al. 1999, Bayes, 2000, Chowdhuri 2001, Cohen 2001, OECD 2004, Richardson et.al. 2000, Stanley 2005). The second group studies the possibility of replicating the program under different perspectives (GKP 2003, Knight-Jone 2005, Molina 2006).

[5] In 2006, there were two partners in GrameenPhone: Telenor (62%) and Grameen Telecom (38%). Telenor ASA is Norway's leading telecommunications company, a leader in GSM technology, and an early foreign mobile phone investor in Bangladesh. Grameen Telecom is an independent non-profit organization established by Grameen Bank to participate in the VP program, aiming to provide mobile phone service and other ICTs to the poor in rural Bangladesh. (GrameenPhone 2006).

[6] Each VP allows access to 70 people on average (Caspary and O'Connor 2003). In 2004, GrameenPhone's revenue from VP was BDT3,610 million (about USD61 million using the exchange rate in the report, BDT- Bangladeshi Taka is Bangladesh currency). The total revenue was BDT19,700 million (about USD333 million) (GrameenPhone 2004).

[7] BTTB is a state-owned telecommunications company in Bangladesh. BTTB monitors and controls the whole fixed phone network in the country.

[8] Dish-Wallahs of Delhi was a ICT model in India in the early 1990s, in which entrepreneurs wired the city with satellite dishes. Entrepreneurs invested small amount for satellite dishes and other components, then connected surrounding apartments with television networks to make money (Sullivan 2007, pp. 32-33).