



WHAT WORKS: GRAMEEN TELECOM'S VILLAGE PHONES

KEY TOPICS: rural telephony; shared-access; franchise via local entrepreneurs; private sector-civil society partnership

THE TAKE-AWAY: The high revenues generated by Grameen Telecom's shared-access business model suggest how powerful such approaches can be. With local entrepreneurs providing one phone per village, the whole community is the customer. The phones generate revenues averaging \$90 per month in rural Bangladesh, one of the world's poorest countries. Social and economic benefits to the entrepreneurs, and to the village, from phone access have proved to be high as well.

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EXECUTIVE SUMMARY

In Bangladesh, 97% of all homes and virtually all rural villages lack a telephone, making the nation one of the least wired in the world. This lack of connectivity has contributed to underdevelopment and the impoverishment of individual Bangladeshis. To address this problem Grameen Bank, a micro-finance institution, formed two entities: 1) Grameen Telecom (GT), a wholly-owned non-profit organization to provide phone service in rural areas as an income-generating activity for members of Grameen Bank, and 2) GrameenPhone Ltd. (in partnership with U.S., Norwegian, and Japanese companies), a for-profit entity that bid on and in 1996 won a national GSM cellular license. GrameenPhone (GP) has since become the country's dominant mobile carrier,¹ providing service in urban areas and along the major railway routes via a network of cellular towers linked by fiber optic cable.

BUSINESS MODEL

Grameen Telecom's goal is to connect rural Bangladesh through the provision of mobile telephone service by creating micro-enterprises that can both generate individual income and provide whole villages with connectivity. GT uses GrameenPhone's advanced GSM technology in stationary village phones owned and operated by local entrepreneurs. These entrepreneurs purchase the phones with money borrowed from Grameen Bank,² and sell phone service to customers by the call. Rates are generally twice the wholesale rate charged by GP plus taxes and airtime fees. An average of 70 customers a month use each phone; this shared-access business model concentrates demand and creates relatively high cash flow, even in poor villages, enabling operators to make regular loan payments and still turn a profit. Repayment rates to Grameen Bank are 90-95%.

HUMAN CAPACITY

Key to the success of the village phone has been the development of a cadre of entrepreneurs nurtured by Grameen Bank. After the Bank approves financing of a phone, GT buys a cellular phone subscription on behalf of the entrepreneur and provides the connection, necessary hardware, and training to operate it. GT also tracks trends in phone use and identifies operators who are having difficulty marketing or collecting payments for the service.

The village phone network also yields important secondary benefits to the women who live in the villages that they serve. Because 95% of operators are female, and the phones are in their homes, women who might otherwise have had very limited access to a phone feel comfortable using one. There is also some evidence that, because the phones are so important for whole villages, having female operators has helped to enhance the status of women in the communities where they work.

INFRASTRUCTURE

Grameen Telecom's original goal was to have a phone in each of Bangladesh's 65,000 villages by 2000, but only 4,543 village phones were in service as of March, 2001. The primary constraint has been a distorted telecommunications market controlled by a monopolistic government provider, BTTB. Because BTTB has been unwilling to increase its capacity to connect mobile systems to the fixed telephone infrastructure, GP and other mobile companies have been unable to add additional phones to the national switched network and instead have had to offer primarily mobile-to-mobile phone services.³ This infrastructure barrier has also limited expansion of the rural phone network.

A second constraint is GP's use of cellular technology for fixed phone centers, a choice that is neither efficient nor probably competitive over the long run. GSM—used throughout much of Europe and Asia—is far more



expensive than fixed wireless local loop (WLL) systems used by Grameen Telecom’s competitors, Sheba and BRTA. While GSM towers can provide service within 15 to 20 kilometers, WLL towers provide coverage within 50 kilometers. Moreover, WLL provides better bandwidth for data transmission and at a lower cost.

POLICY

Bangladesh’s telecom regulatory regime is both antiquated and anti-competitive. One consequence has been BTTB’s ability to maintain control over the switched network without expanding its capacity, even in the face of high demand. Scarcity forces Bangladeshis to pay large sums (allegedly both legal and illegal) to BTTB officials in order to obtain phone service. BTTB’s control of the network is likely to become an even more significant market disadvantage to GP and other mobile operators when BTTB launches its own GSM mobile network this year.

ENTERPRISE

Grameen Telecom’s village phone venture as structured in Bangladesh would not be feasible without access to the credit and bill collection services provided by Grameen Bank and the infrastructure and urban mobile phone network provided by GrameenPhone. Village phones would be far less successful if GP were not able to discount by 50% the rate charged to GT for a phone call, an underlying subsidy made possible by a transfer of profits from the more profitable urban part of the business to the rural sector—and a significant advantage unavailable to rural-only competitors BRTA and Sheba.

CONTENT

Demand for telephone service in rural Bangladesh remains high despite relatively limited marketing and no overt content development by GT or GP. In large measure this is because the village phones offer tremendous economic value to the users who would otherwise have to spend hours or days traveling to other towns to make a phone call. According to one study, the average consumer savings for a phone call from a village to Dhaka ranges from 2.6% to 9.8% of the user’s mean monthly household income.

Bangladesh is also a labor-exporting country with many rural people working overseas. As a result, one of the most important functions of the village phone is to facilitate remittances from relatives.⁴ Local business people and farmers use the phone to reduce costs, get better prices for their products, and plan shipments to reduce spoilage of perishable products.

KEY LESSONS

Were it not for policy and infrastructure barriers, Grameen Telecom’s village phones might already serve all of Bangladesh’s 65,000 rural villages. The high revenues generated by the shared-access business model suggest how powerful market drivers for such approaches can be. And as a development-centered IT strategy, the village phone program promises broad development benefits, including enhanced productivity and social welfare and new sources of rural income.

Nonetheless, the Grameen Telecom business model relies on subsidies from urban cellular users, on financing and other support from Grameen Bank, and on GSM cellular technology that is unsuited (or at least very high cost) for sparsely-populated rural areas, for fixed phone centers, and for data transmission. The wireless local loop technologies used by GT’s rural competitors or wireless multi-point distribution technologies—already being deployed by the TeNeT group and their partners in rural India—promise lower costs and higher data bandwidths. Under favorable policy environments, such rural networks combined with shared access strategies that concentrate demand and generate efficient usage may well enable profitable, market-driven approaches to providing connectivity and infrastructure in rural areas.



RURAL CONNECTIVITY: GRAMEEN TELECOM'S VILLAGE PHONES

EVOLUTION OF GRAMEEN TELECOM AND GRAMEENPHONE

Since its founding in 1976, Grameen Bank has become one of the developing world's most successful microlending institutions. Over its first twenty years, Grameen Bank made \$2 billion in loans to rural entrepreneurs, helping to spur development in some of the world's poorest communities. With 1,128 branches and over 66,000 centers in more than half of the nation's 65,000 villages, Grameen Bank has an extensive presence throughout Bangladesh and is the largest rural finance institution in the country.

The Bank's primary business is to make very small loans (averaging US\$160) to finance entrepreneurial ventures and cottage industries. Most loans have gone to traditional agricultural activities, such as buying and raising farm animals or marketing agricultural products. By the mid-1990s, bank officials wanted to begin financing potentially higher-yield businesses than animal husbandry or food marketing to capture some of the economic benefits of the emerging technology sector. Officials like Managing Director Mohammed Yunus were also keenly aware of the substantial development benefits of telephone access in villages.

In 1994, a US-based native Bangladeshi entrepreneur named Iqbal Quadir approached Grameen Bank with the idea of using the Bank's financing mechanism to establish a nationwide telecommunications business that would serve the country's rural villages. From Quadir's perspective, telephones were not luxuries or mere conveniences, but rather essential business tools that could dramatically improve the productivity of poor Bangladeshis. Quadir helped Grameen Bank officials to understand that rural telephones were the digital equivalent of the cows they had been financing—profitable, secure investments that offered real value to rural villagers.

Bangladesh was a particularly important test case for Quadir's concept, as its telecommunications infrastructure is one of the least-developed in the world, far behind even neighboring India or Pakistan. Some 97% of its households, and virtually all of the homes outside the largest cities, lack telephones. For rural villagers, it is not uncommon to spend two days traveling to a city to make an important phone call.

Table 1. Telephone Main Lines per 100 Inhabitants, 2000

Country	Main Lines per 100 People
Bangladesh	0.34
Pakistan	2.22
India	3.2
Sri Lanka	4.06

Source: ITU Telecommunication Indicators, 2000

In 1995, the liberalization of Bangladesh's telecommunications sector created a unique window of opportunity for Grameen Bank. The Bangladeshi government decided to auction licenses for the operation of cell phone businesses to private firms. Grameen Bank and Quadir's US company, Gonofone, formed a consortium with Norway's Telenor to bid for one of the licenses. The Bank started Grameen Telecom (GT) as a wholly-owned non-profit organization and submitted a bid for a cell phone license, with a newly-created for-profit entity called GrameenPhone Limited (GP) as the operating company.⁵ GP was awarded one of four nationwide licenses for GSM 900 cellular mobile phones on November 11, 1996. On Bangladesh Independence day, March 26, 1997, less than five months after receiving its license, GP began offering mobile phone service in Dhaka.



VILLAGE TELEPHONE BUSINESS MODEL

“GrameenPhone is merely what we need to do Grameen Telecom’s Village Phone.”

Muhammad Yunus, Managing Director, Grameen Bank

GP is a nationwide mobile phone company that provides telephone service in both urban and rural areas of Bangladesh. For urban customers with sufficient income, GP sells individually-owned handsets and traditional mobile phone service plans. GT’s primary goal, on the other hand, is to promote rural sustainable development by extending telephone connectivity to Bangladeshi villages that would otherwise have no phone service at all, ensuring at least one phone in each of Bangladesh’s villages and providing everyone in the country with access to telephone services within ten minutes’ walking distance. Achieving this goal from a state of nearly zero connectivity, with overwhelming technical and political obstacles, has been an enormous challenge.

For poor, rural customers in Bangladeshi villages, GT has worked with Grameen Bank to establish a unique Village Phone business model. It involves financing telephone businesses that serve entire villages.

GT scouts out technically feasible rural locations for the Village Phone business. After selecting a candidate village, GT works with local Grameen Bank branches to encourage literate, creditworthy, Grameen Bank members to apply to become Village Phone operators. Following a screening process, these entrepreneurs are given unsecured loans from Grameen Bank to finance the purchase of mobile phones to operate businesses of leasing the phones to customers by the phone call.⁶ The money that Grameen Bank lends the Village Phone operator (approximately US \$420) is repaid through revenues collected from users who are charged per minute for the time they make or receive calls.

Despite extremely low per capita income in the rural villages of Bangladesh, aggregating the buying power of an entire village provides sufficient revenue to support the infrastructure and operating costs of the telephone operator, who is able to maintain a relatively high cash flow. The shared-access model, providing telephone connectivity for entire communities at an affordable cost per use,⁷ is enormously profitable. An average of 70 customers per month use each phone, generating revenues of \$93 a month as of March 2001. Revenues per Village Phone are twice as high as those of GP’s urban mobile phones.

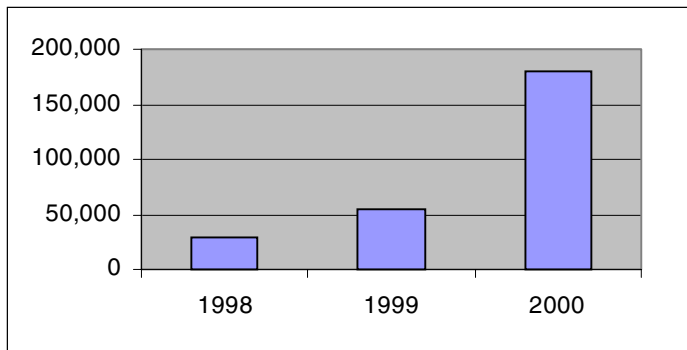
With low operating costs—the market “retail” rate for a phone call is generally twice the wholesale rate charged by GrameenPhone (\$ 0.03) plus taxes and airtime fees—operators are able to earn a profit and repay their loans.⁸ With a unique peer support system and regular meetings to collect payments, Grameen Bank has been able to maintain an average repayment rate of 90-95% on its loans, a far better track record than for most small business loans in developed countries.

Business Performance

Between 1991 and 1996, mobile telephone services in Bangladesh were provided by a single company, Pacific Bangladesh Telecom Ltd (PBTL), that targeted the country’s relatively small urban elite. The market expanded significantly when new licences for GSM networks were awarded in 1996. However, GrameenPhone’s competitors have not been able to expand beyond subscriber bases in the tens of thousands. GrameenPhone, meanwhile, has experienced rapid growth.



Figure 1. GrameenPhone Subscribers, 1998-2000



Source: Paul Budde Communication, 2001

By the end of 2000, GP subscribers totaled 193,588, and by March 2001, nearly reached 247,000. As the following data show, GrameenPhone has captured approximately 63% of the country's mobile phone market.

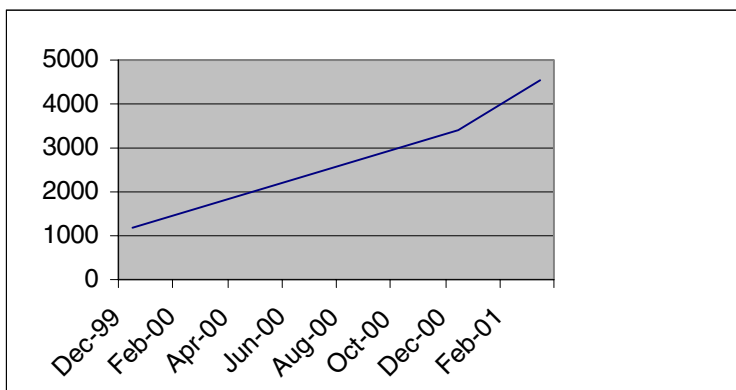
Table 2. Mobile Subscribers by Major Operator, December 2000⁹

Operator	Technology	Subscribers	Market Share
GrameenPhone	GSM-900	180,000	63%
Pacific Bangladesh Telecom LTD (PBTL)	AMPS/CDMA	20,000	7%
Sheba Telecom (Pvt.) LTD	GSM-900	34,000	12%
TM International AK TEL	GSM-900	52,000	18%
TOTAL	GSM/AMPS/CDMA	286,000	100%

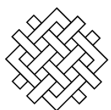
Source: Global Mobile, February 2001

The Village Phone business has experienced a similar rapid rate of growth. The number of Village Phone operators has increased from just over 1,000 at the end of 1999 to 4,543 in March 2001, according to data from GTI.

Figure 2. Village Phone Subscriptions, 1999 to 2001 (in numbers of subscribers)



Source: Grameen Telecom, 2001



As with subscriber growth, revenue growth has been substantial. From June 1998 through July 2000, the amount of the average monthly Village Phone bill increased by a total of 137%—from \$60.75 to \$144.02. The average Village Phone bill was three to seven times the size of the average urban phone bill, in part because most urban customers are restricted to making calls to other GP phones, while many rural customers use the Village Phone to call long-distance to relatives working in Dhaka or overseas. Revenues for the Village Phone vary by region, and are significantly higher than the \$93/month average in communities that make an above-average number of international calls because of family members working abroad (Latif, 2000).

Table 3. Monthly Village Phone (VP) Bills (in Taka)

Month	Average Monthly Billing			Number of VPs Billed
	All	Dhaka Zone	Chittagong Zone	
Jul-99	5,295	4,356	7,443	467
Jan-00	7,559	5,487	9,542	1,067

Source: Latif, 2000.

Rural phones, which represent fewer than 2% of the phones used on GP's network, account for 8% of the company's total revenue. While Village Phones are more profitable than urban phones on a per-phone basis, the company depends primarily on its urban business for the bulk of its revenues. GP's urban phone network enables GT to expand connectivity to rural villages, by subsidizing the Village Phone System. The 50% discount on the rate the company charges Village Phone operators enables them to capture the difference between the discounted price and the retail market rate.¹⁰ In fact, in the eyes of Grameen Bank and Grameen Telecom officials, GP exists primarily to fund the rural side of the business, even though most of its subscribers are urban.

Elements of Village Phone Success

Human Capacity

An essential element of the Village Phones' success has been the development of a cadre of phone entrepreneurs who receive funding from Grameen Bank as well as initial business support from Grameen Telecom during the startup phase of their operations. For example, after the Bank selects a Village Phone operator and approves the financing of her phone, GT buys a cellular phone subscription on her behalf and provides the connection, necessary hardware, and training to operate the phone.

More importantly, GT's support lasts long after the startup phase. For example, while telephone rates are determined by individual operators, and can be as high as the market will bear, Grameen Telecom supplies a recommended price list that helps to ensure that phone operators do not price themselves out of the market or out of business.¹¹ In fact, GT claims to monitor the rates charged to ensure competition. If a phone operator charges significantly more than the market rate, GT may put a competitor in that operator's service area to induce price reductions.

GT also serves as a support system for the phone operators who, though entrepreneurial, are also relatively inexperienced at running businesses. By tracking trends in phone use, the company can identify operators who are having difficulty marketing phone service or collecting payments for phone use. These operators are then provided with personal assistance to ensure that their businesses succeed.

Village Phone operators are trained in how to use their mobile phones, but GT and Grameen Bank staff are available to address problems during weekly meetings held to collect phone revenue. In addition, GP itself



provides direct customer service to anyone having trouble using a phone via a 24/7 call center for customer concerns. One sign of good customer satisfaction is GP's relatively low rate of service cancellation (or "churn rate") of 2.18% per month.

Improved Status of Women

While the direct financial benefits to phone operators are significant, the phones have also reportedly helped to elevate the status of the female phone operators within their villages.¹² Surveys have found that the Village Phone operators become socially empowered as they earn an income, gaining participation in family decisions in which, in rural Bangladeshi society, women usually have no say. Women operators also gain status because other villagers must travel to their homes to make or receive phone calls, making the operator's home an important center of activity within the village.

Some female villagers report that the Village Phones have been liberating to women besides the phone operators, too, in part by creating a public space—the Village Phone Office—where women can go unescorted by a male relative. With women as Village Phone operators, other women in this Islamic society are more likely to feel comfortable using a phone.

INFRASTRUCTURE OPPORTUNITIES AND CONSTRAINTS

Leasing Fiber Optic Network

Bangladesh's dense population and relatively compact geography make it efficient to cover with wireless infrastructure.¹³ Moreover, GP made an important strategic decision to enter into a long-term agreement with the Bangladesh Railways to lease the railways' underutilized, 1,800-kilometer, high-capacity fiber optic digital transmission network to serve as the backbone of GP's telephone system.¹⁴ This agreement gave GP instant access to a nationwide fiber optic infrastructure that essentially parallels the one operated by BTTB.¹⁵ Thanks to this infrastructure, GP's rural telephone service stretches through much of the nation's rural countryside. Only in areas without fiber optic infrastructure, such as the southern coast, has GP built microwave links.

Interconnection Constraints

The country's incumbent telecommunications operator and carrier, the Bangladesh Telegraph and Telephone Board (BTTB), is one of the biggest obstacles to the growth of the Village Phone enterprise. BTTB held an absolute monopoly over Bangladesh's telecommunications sector until 1989, and has performed abysmally throughout its tenure. The waiting time for a fixed-line connection is more than 10 years, according to one account (Richardson, 2000). The installation charge of US \$450 for a new line is one of the highest in the world, and the charge for calling the UK is six times higher than the charge for calling Bangladesh from the UK. On average, only two of 10 calls are successfully completed. The company's complaint rate—at 50 per 100 lines per year—indicates that consumers are dissatisfied (Richardson, 2000).

While BTTB's poor performance resulted in pent up demand for telephone service and provided opportunities for more efficient competitors to enter the market, the agency has strangled the mobile sector by limiting access to the national fixed network, which it alone controls. In its Fifth Five Year Plan (1997-2002), BTTB set forth goals of ensuring universal telephone service, expanding telecom infrastructure in both urban and rural areas to enable one telephone per 100 people by 2002, expanding international telecom circuits and ancillary facilities for smooth international operations in urban and rural areas, ensuring telephone connection to all industries, particularly those located in Export Promotion Zones (EPZs) and industrial estates, and improving overall quality of service. Given its past performance, however, it is unlikely to achieve these objectives.

As a consequence of BTTB's unwillingness to expand the fixed line network, GP has been forced to stop sales of



mobile phone subscriptions that connect to fixed line subscribers. Instead, GP and other mobile companies have been relegated to selling inferior mobile-to-mobile phone services. GP's most common service is "GP-GP Regular," which enables callers to connect only to other mobile phones. For less credit-worthy consumers, GP also offers a popular pre-paid service for mobile-to-mobile calls. As of March 2001, such mobile-to-mobile calling plans accounted for a large majority of the company's urban subscriptions.

Subscribers to tandem or nationwide dialing services that connect to the fixed network are also assessed a small fee per call to cover the cost of interconnection—and to limit the number of such calls. GP offers national roaming—connecting GP customers to phones on its own and competing mobile networks—to all customers. Incoming calls from mobile phones are not assessed a charge, but all incoming calls from the BTTB fixed network are assessed a small surcharge.

Mobile-to-mobile service is marketable in Bangladesh thanks to the breadth of GP's service areas, including its rural network, which enables urban customers to use their phones as they travel across the country. GP has one of the largest and most rapidly growing networks of phones in the country, with 227 base stations and 634 cells, covering nearly 30% of the population.

One side-effect of the BTTB infrastructure bottleneck has been an unusual degree of cooperation among competitive mobile providers, who have an incentive to work together to create as large a mobile-to-mobile network as possible in order to compete with fixed-line telephone service. A key question is whether the country's mobile providers can together force BTTB to expand the fixed network, or whether the mobile network will completely supplant the fixed-line infrastructure.

A decision by BTTB to launch its own GSM network in the second half of 2001, following the construction of necessary infrastructure in Dhaka, may lead to formidable competition for GP. BTTB will be exempt from obligations and conditions imposed on private operators, such as operating license fees, base station rents, and interconnection problems, and will have full access to fixed-line services, not to mention financial resources and political support unavailable to GP or any of the country's other mobile providers.

"...We regret that BTTB continues not to support the mobile operators with the possibility to interconnect to the fixed-line telephones. Even worse—instead of improving the fixed-line network, including international lines, BTTB is planning to launch its own GSM mobile services."

Ola Ree, Managing Director, GrameenPhone in March 2001 newsletter

GSM—An Inefficient Infrastructure

GP's business plan is to provide affordable Global System Mobile (GSM) cellular service nationwide.¹⁶ GSM technology has enabled GP to deploy a nationwide, truly mobile system; its base stations are strategically located so that major transportation routes between urban areas have mobile phone service, providing essentially continuous coverage. While this advantage does not apply to the essentially stationary phone businesses in villages, it enables GP to market its services to higher-income urban dwellers who wish to use their phones as they travel around Bangladesh and to other countries.¹⁷

The Village Phones typically remain grounded in public phone offices and do not move from place to place. Hence, the technology may be more advanced, and expensive, than necessary for the functions of the Village Phone business.

The Village Phone faces competition from two private rural telecom companies, the Bangladesh Rural Telephone Authority (BRTA) in the north, and Sheba in the south. Both BRTA and Sheba use lower-cost fixed wireless local



loop technology, which is less expensive to construct because the towers reach ten times as far as GSM towers (50km compared to 5km) and the handsets are typically cheaper.

Although BRTA is a private company, it has wide powers to grant concessions, determine spectrum frequencies and operate mobile, paging and value-added network services. In a project with US-based Phoenix Wireless, BRTA has installed a fixed wireless phone system to serve up to 250,000 subscribers in Dhaka. Sheba Telecom uses a wireless local loop system to provide service to subscribers spread across five towns and cities in southern Bangladesh. Incorporated in 1995, Sheba Telecom Ltd has a 25-year license that is restricted to rural areas and that mandates provision of services to 191 villages. It is among the smallest companies in the mobile market, with less than a 7% share as of 2000, and its service area encompasses only in a limited region in the south, around Chittagong.

GrameenPhone's Village Phone venture has two important competitive advantages that, for at least the near future, outweigh the higher cost of its GSM telephone technology. One is first-mover advantage. GrameenPhone started up earlier and more extensively than either BRTA or Sheba. Hence, it captured key markets in urban, peri-urban, and rural areas. The second is the breadth of its GSM network, which is critical because many of its accounts are for phones that operate within the network, not between the network and the fixed-line telephones. Having a critical mass of Grameen phones helped to create a market for these GSM-only telephones.

GP's competitors, BRTA and Sheba, cannot expand their markets because they cannot get additional interconnections to the fixed network. Apparently, BRTA purchased millions of dollars of wireless loop equipment that has been warehoused simply because BTTB refuses to make interconnections available. Without interconnections, the value of a BRTA or Sheba phone, which for the most part can only connect to other BRTA or Sheba phones, is dramatically diminished. In part, this limitation on fixed-line connection is responsible for GrameenPhone's ability to roll out GSM technology in rural areas with little competition from BRTA or Sheba. Ironically, if reforms cause BTTB to increase interconnection capacity, competitors like Sheba and BRTA, using lower cost WLL technologies, may be better positioned to compete with GP in the rural market.

POLICY

A number of regulatory obstacles have hindered the development of phone service in Bangladesh and have hampered GT's efforts to expand the Village Phone to more communities. Chief among them are the country's telephone regulations, which are both antiquated and unfair. They permit BTTB to maintain sole control over the fixed network without being obligated to expand its capacity. Because of scarce landline phones, Bangladeshis must pay large sums (allegedly both legal and illegal) to BTTB officials to obtain a phone line. For mobile operators, the stranglehold over the fixed network limits the number of mobile channels that providers like GP can connect to the fixed-line network.

By regulation, all international calls, including international roaming calls made from GP phones used in other countries, must use BTTB lines, which further reduces the capacity of the fixed network and ultimately GP's ability to carry international voice traffic. If the current regulations were lifted, GP and presumably other mobile providers could obtain satellite phone service for international calls.

In response to BTTB's failure to improve service and attract foreign investment, Bangladesh's Parliament has recently approved legislation establishing a regulatory body called the Telecommunications Control Commission that will assume some of the powers previously held by BTTB, including allocating frequencies, fixing tariffs, intervening in complaints by subscribers, and regulating Internet communications. New commission notwithstanding, BTTB will maintain authority over fixed-line telephone services.



Currency Constraints

Bangladesh has made efforts to keep its currency from flowing excessively to other countries. One consequence of this policy is that contracts with mobile phone operators in other countries often allow for only one-way roaming, routed through the BTTB network, to avoid paying phone fees to those countries. This restriction further limits network capacity and the ability of GP to negotiate roaming agreements with a wider range of nations.

Taxes

With such low per capita incomes, taxes can price many products out of the reach of most Bangladeshis. Customs duties and value-added taxes levied on mobile handsets can total roughly 60% of their cost. In addition, royalties of \$19 per year on mobile phones—because they are defined as luxury items, not productive tools—make handsets prohibitively expensive for many middle class Bangladeshis.

ENTERPRISE

Given the profitability and high revenue flows of Village Phones, the venture would in principle be feasible without the access to credit provided by Grameen Bank; GT could, in theory, finance the phones itself or simply give them to its operators. But Grameen Bank's ancillary services are as important as its financing of telephones. Grameen Bank's screening process ensures that operators are of very high caliber. The bank's efficient system of weekly meetings for collecting fees reduces GT's costs. Its regular meetings also enable borrowers to discuss problems before they escalate, thus minimizing defaults. Grameen Bank branch managers remain responsible for collecting bills from the operators, ensuring efficient and prompt payment to GP. In contrast, competing phone companies BRTA and Sheba must collect fees directly from customers who lack the same level of commitment to repay as Grameen Bank members, without a peer network to encourage and facilitate payment.

In some cases, local Grameen Bank managers have constrained the expansion of Village Phone services.¹⁸ Villages that were technically capable of receiving a Village Phone were sometimes passed over due to poor credit ratings. In the southern coastal area, the Bank's lending efforts were so new that officers did not want to risk financing a Village Phone business. In one zone with a 100% loan repayment rate and good network coverage, local bank officials reportedly did not want to finance a Village Phone enterprise, fearing the new venture would fail and ruin their record (Latif, 2000).

CONTENT

GP does not provide specific "content" on its Village Phones, such as information services or Internet access. Nonetheless, underdevelopment of Bangladesh's phone system has resulted in pent-up demand for telephone services, including in the poor, rural communities where three quarters of the population live.

While the urban Grameen Phone uses traditional marketing techniques, from billboards to traditional print media, Grameen Telecom's clients are generally illiterate or semi-literate individuals with significantly less exposure to traditional media. While some phone providers print up business cards or make signs to indicate the existence of a telephone center (most phone houses have a sign outside with the Grameen logo and explanation of the services offered inside), much of the marketing is by word of mouth, according to research by the ILO.

Demand for telephone service in rural Bangladesh remains high despite relatively limited marketing and no overt content development by GT or GP. In large measure this is because the Village Phone offers tremendous economic value to users who would otherwise have to spend hours or days traveling to other towns to make a phone call.



Income Impacts

The Village Phone has had direct and indirect impacts on the incomes of village residents. Approximately 8% of calls are made by farmers and business people to get better prices from middlemen. According to one study, researchers found that the ability to check market prices by telephone contributed to higher prices obtained for eggs, chickens, and ducks and lower prices paid for poultry feed. The ability to plan shipments more accurately also reduced the spoilage of perishable products (Bayes, 1999). Many of the Village Phone operators have developed side businesses as information intermediaries, collecting the prices of frequently-traded commodities and supplying them to the local business people for a small fee.

The Village Phones are reportedly used 86% of the time to discuss a wide range of financial issues. Even calls described as “social” in nature frequently involve transfer of information about market prices, market trends, and currency exchange rates, making the phone an important tool for households to keep abreast of market information and thereby improve their livelihoods.

Approximately 42% of all calls involve remittances from family members living in larger Bangladeshi cities or overseas. In fact, having a family member working overseas was found to be the most important independent variable in determining phone use. In a country with a significant number of citizens employed in other countries, calls to request, schedule, track, and report on remittance payments are in some sense a loosely arranged alternative to the banking system. Given the lack of access by the poor to banks and usurious overhead charged by money transfer services, phone calls can significantly reduce the risk and cost of transfers and enable recipients to get the best possible currency conversion rates. According to one study, a single phone call made to facilitate a remittance from a family member working as a wage laborer in Dhaka City saves from 2.64% to 9.8% of the family’s average monthly household income. The cost of traveling to another town to make a phone call ranges from 1.93 to 8.44 times the cost of the call on a phone located within one’s own village.

Mobile telephones have emerged as economical and efficient alternatives to landline telephone systems in many developing countries. Where sluggish, monopoly-controlled telecom sectors have led to insufficient network infrastructure and phone waiting lists measured in years, consumers have flocked to mobile phone providers.¹⁹ Mobile phones now account for 25.6% of total telephone subscribers in Bangladesh, according to data from the ITU.

CONCLUSIONS

Bangladesh remains desperately poor, despite growth rates of 4 to 5% in recent years. The economy has structural problems, from a weak financial sector to an unproductive, corrupt, and chronically money-losing public sector (US State Department, 2001). Poor infrastructure and a susceptibility to floods and cyclones regularly cause economic and environmental disruption. And, although agricultural output has increased steadily since independence and the country is nearly self-sufficient in food during normal years, rural poverty remains endemic.

The provision of telephone connectivity to rural areas has served two important purposes: promoting economic development by helping individuals and businesses gain efficiency through communications, and promoting social and economic development for the individuals who own and operate the telephone enterprises.

In the future, the Village Phone venture may help older or disabled bank members by enabling them to invest for their retirement.

Digital telecommunications technology can support a wide range of economic and social goals and become part



of a far-reaching development strategy. By connecting people with jobs abroad, the technology can provide employment in services for literate Bangladeshis. In India, this strategy has been effective in the software industry and in facilitating multinational investment in back-office services like call centers. More effective connectivity reduces one substantial obstacle to foreign firms that might consider locating in Bangladesh. Better telecommunications—including village-level Internet connectivity—may also help to connect local markets for handmade goods to buyers in distant locations, supporting indigenous craftspeople.

Environmental, Health, and Safety Impacts

For villages moving from having no phone to one phone, the marginal benefits to health and safety can be significant, ranging from the ability to signal distress or reach public safety officials during natural disasters to access to emergency medical advice. And, unlike fixed-line phones, the mobile phones can be carried out of the village if evacuation is necessary. The phones not only offer access to emergency personnel, but also can be used to contact government officials or the media to report problems, nuisances, or hazards. The Village Phone is also used by rural families to share information about the family's physical and economic health with overseas relatives. Without the Village Phone, there are few alternatives for keeping in touch.

It is difficult to forecast the broader environmental impacts that village telephone connectivity may have. Increased phone contact may substitute some trips (e.g. to get to a telephone), but it may also induce greater mobility and travel as individuals become better connected to people living in distant cities. Increased income at the village level will lead to increased consumption, quite possibly of goods and services that are produced or used in environmentally harmful ways.

In the absence of policy and infrastructure barriers, Grameen Telecom's Village Phones might already serve all of Bangladesh's rural villages. The high revenues generated by the shared-access business model make the Village Phone a profitable enterprise. And as a development-centered IT strategy, the Village Phone program promises broad development benefits, including enhanced productivity and social welfare and new sources of rural income.

Nonetheless, the Grameen Telecom business model relies on subsidies from urban cellular users, on financing and other support from Grameen Bank, and on GSM cellular technology that is unsuited (or at least very high-cost) for sparsely-populated rural areas, for fixed phone centers, or for data transmission. The wireless local loop technologies used by GT's rural competitors or wireless multi-point distribution technologies—already being deployed by the TeNeT group and their partners in rural India—promise lower costs and higher data bandwidths. Under favorable policy environments, such rural networks combined with shared-access strategies that concentrate demand and generate efficient usage may well enable profitable, market-driven approaches to providing connectivity and infrastructure in rural areas.



NOTES

- ¹ As of March, 2001, GP had 57% of the mobile telecom market in Bangladesh.
- ² Grameen Bank chooses the entrepreneurs, 95% of whom are women; phone loans are approximately US \$420, more than average annual income.
- ³ Roughly 88% of GP's 243,000 urban phone subscriptions (as of March 2001) are for plans that restrict customers to calling other mobile phones.
- ⁴ Calls to initiate or track remittances account for 42% of all calls.
- ⁵ GP was funded by the International Finance Corporation, Commonwealth Development Corporation, and the Asian Development Bank (\$50 million), as well as Norway's Telenor, Japan's Marubeni Corporation, and the US' Gonofone (\$55 million). GT received a \$10.6 million loan from the Soros Foundation.
- ⁶ In communities without electricity, GT also provides a solar generator supplied by another subsidiary of Grameen Bank, Grameen Shakti, for approximately US\$150.
- ⁷ Bangladesh's annual per capita income is approximately \$370 nationwide, but much lower in rural areas, according to the World Bank (<http://www.developmentgoals.org/findout-definitions.html>).
- ⁸ GP charges \$0.04 per minute for local peak calls made by the Village Phones, half the rate charged to urban customers. Local calls to the fixed BTTB network are assessed an additional \$.03 per call fee. For national and international calls, GP charges BTTB long distance rates plus VP airtime charges and 15% VAT. GT adds an additional 13% (15%?) service charge. Each VP operator earns, on average, a net profit of US\$4.80 per week, according to research by Bayes (1999).
- ⁹ December, 2000 is the latest date for which comparative data are available.
- ¹⁰ Market rate = 6 taka per minute (at 57.4 taka/dollar). VP operator pays 4.5 taka for the first minute; 3 taka for each additional minute.
- ¹¹ Nevertheless, the Village Phone operator remains in control of her business; call charges often vary according to the relationship between the operator and the customer and are typically discounted when the call brings bad news (e.g. a death in the family).
- ¹² The income that Village Phone operators earn has been reported to comprise about 24% of the average household income, and in some cases was 40% of total household income.
- ¹³ Bangladesh's population density is 981 per square kilometer, one of the highest in the world; geographically, it covers an area approximately the size of Wisconsin.
- ¹⁴ The fiber network was built with support from the Norwegian Agency for Development Cooperation (NORAD), which was a Grameen Bank lender in the 1980s.
- ¹⁵ GP's lease to operate the Bangladesh Railway's fiber optics transmission network has not only given it "first-mover advantage" by enabling it to roll out national mobile service, but also enabled it to sub-lease the valuable excess fiber optic capacity to different businesses, including a competing mobile operator, Aktel, and the Bangladesh Navy.
- ¹⁶ GSM is a cellular technology that allows the user to move from cell to cell, and to use the phone in other countries with GSM technology that have roaming agreements with GP.
- ¹⁷ All GP prepaid subscribers (and a portion of postpaid subscribers) have roaming privileges within Bangladesh and customers subscribing to international dialing services can use their handsets in select foreign countries.
- ¹⁸ The Village Phone program does not add significantly to the profitability of bank branches and represents a small part of the total operation of the bank. Local managers have neither targets to meet under the Village Phone program nor pressure to focus on Village Phone expansion (Latif, 2000).
- ¹⁹ In poor nations like the Ivory Coast and Cambodia, for example, the number of mobile phones now exceeds the number of landline phones (ITU, 2000).



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