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From Operations to Applications
Advancing Innovation in Mobile Services

Innovations Case Discussion:
Roshan

Running a mobile phone company, or any phone company for that matter, is not easy these days, what with challenging economic conditions, intense competition, and ever-changing technology choices. Running a mobile phone company in a place like Afghanistan adds unique challenges. So a mobile operator like Roshan is to be commended, not only for thriving in a tough market, but also for trying to make a difference in the lives of its customers and employees, and in the communities it serves. Roshan is indeed making a difference, and doing an admirable job.

But Roshan, like most mobile network operators (MNOs) in emerging markets, is deploying conventional technology and conventional business models. Real innovation means more: new applications, unconventional network infrastructure decisions, and genuine capacity-building for their specific market situation. Mobile operators have already made a huge impact on the developing world, but if they're going to extend those impacts to those at the base of the pyramid (BOP), the need is to think beyond what has worked in the past and develop new approaches to reach now-unserved customers.

AN IMPRESSIVE ACHIEVEMENT

Roshan has accomplished a lot since its inception in 2003. Building a network across a mountainous terrain like Afghanistan is quite an engineering challenge. Add in the human resource constraints and the additional security concerns they face every day, and the cost and effort required to get it right is multiplied many

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times over. Catering to a multi-lingual and often poorly educated customer base is no easy feat, either, so Roshan's aims—to offer western-style customer service to its users and to become a catalyst for growth and socio-economic development—are commendable.

Such high aspirations are not surprising, given Roshan's ownership structure: the Aga Khan Fund for Economic Development (AKFED) is its majority shareholder, and the Fund looks to its investees to reinvest their profits into programs supporting social development, including health, education, culture, microfinance, and humanitarian aid. Roshan's efforts in this regard, in telemedicine, educational support, support for women entrepreneurs, and soup kitchen programs, are important components of the ongoing struggle to bring Afghanistan back into the global community. The international awards it has received amply demonstrate its success.

WHAT IS REAL INNOVATION?

The purpose of this commentary, however, is to address the nature of Roshan's innovations and their actual impacts. And the reality is that very few mobile network operators have been truly innovative in addressing emerging market customers at the base of the pyramid. Many rural communities remain without services in almost every emerging market country; mobile banking has been launched in only a handful of countries and generally does not yet serve the very poor. And a host of other needs—in financial services, health care, education, and access to government services—could be addressed using mobile technology but have not been, even though the potential market is large and vastly untapped. Some handset vendors have tried to address some of the unique requirements of BOP users: think of Nokia's low-end handsets with embedded FM radios or flashlights. But these vendors can only go so far without the participation of their mobile operator clients.

To be fair, MNOs have had little guidance in the area of BOP product planning and business modeling, partly because the operators were growing so fast that they didn't need it, and partly because traditional network vendors and consultants haven't been interested in promoting low-cost solutions (needed to reach poorer customers) to their client base. But as competition increases, urban markets get maxed out, and governments increase their pressure on companies to support rural BOP regions, operators will have little choice but to find ways to address these markets.

With regard to Roshan, one area of innovation that is proving popular and useful is M-Paisa, the mobile payments product originally developed by Vodafone in Kenya under the name M-Pesa. This product succeeded far beyond the original expectations, addressing as it did a huge and somewhat chaotic market for safe, affordable payments systems in countries lacking a decent banking and payment infrastructure. To Roshan's credit, it quickly brought this service to Afghanistan, where it is serving a crucial need. What limits its reach, however, is that M-Paisa

depends on its dealer/agent network to provide cash-in/cash-out services, and that network is still too small to cover its complete subscriber base, much less the rest of the Afghani population. At the same time, the profitability of M-Paisa/M-Pesa has not yet been proven in any of its implementations, so it's understandably difficult to justify a rapid expansion of the dealer network.

Existing mobile payments systems have ostensibly been started with a view to helping address the "unbanked" populations in emerging markets, but so far most users are either existing bank customers, or people who are using the systems only for payments and remittances and are not generating any savings. This isn't Roshan's fault but rather a result of both the product design and the regulatory regimes that dictate who can accept cash deposits from members of the public. Still, if MNOs like Roshan really want to improve the socio-economic lives of their customers, they'll need to think hard about how they adapt these instruments and their customer education strategies to reach and engage very low-income users.

When it comes to being truly innovative, what's needed is an improved effort to develop and pilot new applications. With the exception of M-Paisa/M-Pesa, very few recent innovations have been new applications that are relevant and valuable to BOP customers in emerging markets. NGOs and other groups in these markets are implementing several SMS-based services to provide market information to farmers and fishermen or, in some cases, patient data to community healthcare workers, but most MNOs are not yet involved. A few other valiant efforts are underway: local developer groups in places like India, Kenya, and South Africa are trying to produce mobile products and services that meet the needs of local users in innovative ways. But these groups generally have little or no access to capital to support their work, they often have no links to the mobile operators who are needed to pilot and launch the services, and no management support for figuring out how to go about doing so. Developing applications that are locally relevant, value-added and affordable will require much more effort: from foundations and venture capital groups in seeking out and supporting local entrepreneurs based in emerging markets, and from consultants and operators in piloting those applications.

One interesting example of innovation in an application for fostering savings comes from outside the mobile space. The Naandi Foundation in India is deploying community-scale water treatment plants that provide clean drinking and cooking water at prices low enough to reach virtually all customers—about $.01 a day per person. They are using a pre-paid model that is essentially a month-to-month water saving account. The importance of the saving model is that many rural households do not have reliable incomes, but this way they need not lack clean water because of a short-term cash shortage. The water savings system is now implemented with a paper card that is bought monthly in advance and then punched to record each day's purchase; it will soon be replaced with a magnetic card that, when swiped, records the purchase, deducts the appropriate amount from the stored balance, and unlocks the tap, thus removing the need to have an operator present. As more rural customers obtain mobile phones, a mobile wallet

application that is SMS-based could replace the magnetic card, and could enable wealthier, urban relatives to help replenish the monthly account when necessary. A similar approach could facilitate savings for community healthcare services.

While the water example is fairly simple, it is delivering a much-needed service to an area and to users who would otherwise have no means of generating savings aimed at basic needs such as water and healthcare. Roshan's telemedicine initiative links the Aga Khan University Hospital in Karachi with the French Medical Institute for Children in Kabul and rural Banyam Hospital in order to transmit medical images and diagnostic capabilities, and thus brings much-needed medical expertise to Afghanistan. It uses standard technology: leased lines plus high definition video-conferencing. For the time being, at least, it's not reaching the more isolated populations who can't get to the hospital. To do that Roshan would need to extend its system's capabilities using WiFi or one of the newer wireless broadband technologies such as WiMax; it could then serve distant rural users remotely. Taking it further, it could then set up a system in which patients in a rural health clinic could consult with a doctor at an urban location via a videoconferencing system and discuss their issues with him "face to face." Add a centrally-managed franchise pharmacy system to these local health clinics and now you've got a something approaching a solution for basic rural health needs.

> In rural areas where cell towers are too expensive to deploy, WiFi mesh networks are an option.

Again, this is not a criticism of what Roshan is doing in its telemedicine project; it's just to illustrate that true innovation means going even further in understanding the basic needs of poor rural users and figuring out some unique and simple way to meet them. Roshan's plans to expand its project into rural areas using smart-phones and PDAs will be a critical aspect of meeting these broader needs, but doctors are scarce in Afghanistan and the telemedicine approach may not be cheap enough unless it is coupled with a call center staffed with lay health workers and clinical decision-support tools that can deal with most common problems (as is being done in the Indian state of Andhra Pradesh). Until then, the Afghan Government is still faced with the generally unmet challenge of reaching low-income, isolated patients.

Another important aspect of delivering mobile services to poor rural areas has to do with infrastructure and network design. Designing sophisticated wireless networks is a core competency of MNOs, particularly for those like Roshan that must operate in mountainous terrains. But extending those networks to poor rural areas proves to be difficult for operators in terms of business rationale and cost justification. The average GSM cell tower costs $100K and often much more to install in rural areas, taking into account terrain issues, backhaul and power requirements and labor. The typical mobile operator is hard pressed to spend that

kind of capital for an area that's unlikely to generate much income at all, much less enough to pay for itself in under a few years. What's needed are much cheaper networks. To date, the leading network vendors have been reluctant to promote cheaper solutions, for obvious reasons, although they are starting to develop systems that can run existing technology on less electricity or renewable energy. And a few small initiatives, such as VNL in India, are trying to develop low-cost networks for rural areas, but to date network operators have been nervous about buying what seem to be "stripped-down" versions of equipment from little-known vendors.

One way to address this rural network challenge is to use basic WiFi technology. In rural Quang Ngai Province, Vietnam, we worked with the local operator to install a low-cost, high-performance WiFi mesh village network, which can offer both internet service and a managed VOIP voice service. It's connected to telecom fiber via long-range WiFi backhaul, and fully interconnected to the landline network. (Other means of remote backhaul that can be deployed include WiMax and VSAT.) The capital costs to cover the entire mountainous province of more than one million people are less than one-fifth the cost of providing a conventional cellular network; given the low capital expenditure, this network model can potentially provide service at a profit, even in sparsely-populated, low-income or remote locations.

> A new kind of venture capital is needed to develop true innovation for emerging markets.

The operator in Quang Ngai can now provide low-cost local calling to encourage phone ownership, using low-cost WiFi-only handsets. And, as more people use dual-mode cellular-WiFi handsets that can work on both mobile cellular and rural WiFi networks, the operator can provide seamless service to rural customers when they travel into urban centers. What's critically important is that the operator can now serve these remote areas with an affordable technology, and have an evolution plan for getting rural users started with basic WiFi voice and transitioning them, when the demand develops, to dual-mode use on the cellular network. Should the community's voice needs and income grow enough to justify a full cellular network, the operator still has a broadband WiFi network in place that can serve schools, businesses and regional authorities.

As with the healthcare application above, what's important about the WiFi network example is not the unconventional technology, but rather the creative solution that can meet the needs of low-income rural users. This is the type of innovation that's been lacking when it comes to designing solutions for the people at the bottom of the pyramid.

So how do mobile operators go about developing and implementing these innovative solutions? One challenge facing MNOs everywhere is that management capacity is usually stretched to its limits just providing the basic service model in

the face of very rapid network and customer growth. The days of having surplus staff around to come up with innovative ideas are over for most operators, and counting on their traditional vendors to promote low-cost network solutions hasn't proven very useful to date. What's needed is a more concerted effort on the part of foundations, industry groups and consulting organizations to identify innovative new local applications developers or non-traditional network providers, find ways to support them financially and managerially, and assist them in piloting these applications.

At the same time, consulting capability is needed, to develop new business models that consider the unique needs and limitations of BOP markets and can guide operators in introducing new services to the BOP. One way to approach these issues is to develop venture capital funds aimed specifically at emerging market entrepreneurs. Access to funds is a critical shortcoming right now for entrepreneurs in these markets, as traditional VCs are not eager to enter what look like high-risk areas. The perceived risks include lack of information, difficulty in finding young entrepreneurs with solid management experience, concerns around the local regulatory and tax regimes, and the general need for lots more hand-holding and guidance than traditional VCs are used to giving. A new type of venture capital fund, aimed at providing small amounts of money along with managerial support and assistance in launching pilots in conjunction with operators, would go a long way in helping to develop true innovation for emerging market users.

Roshan is right to be proud of its role as a catalyst in the growth and socio-economic development of Afghanistan. It has done a great job under incredibly difficult circumstances, and it's managed not only to succeed as a private business entity but also to play a leading role in the community's socio-economic development. But there is plenty of room for Roshan, and its peers in other countries, to push beyond the boundary of conventional approaches.