Introduction

Wireless Communication and Development: Micro and Macro Linkages

François Bar
fbar@usc.edu
Annenberg School of Communication
University of Southern California
3502 Watt Way
Los Angeles, CA 90089
USA

Hernan Galperin
hernang@usc.edu
University of Southern California
Universidad de San Andrés
Vito Dumaŝ 284
Buenos Aires
Argentina

This issue of ITID brings together five perspectives on the role wireless technologies can play in the deployment of communication infrastructure and services throughout developing regions. They were selected from the papers presented at the workshop Wireless Communication and Development: A Global Perspective, organized by the Annenberg Research Network on International Communication, at the University of Southern California, in October 2005.[1] Historically, considerable hopes have been placed on the promise of wireless technologies to help bring communication networks to underserved areas. Because they do not require the deployment of expensive wire networks—with the attendant need for rights of way—wireless networks have been seen as the best way to bring communication access to remote areas quickly. With the advent of relatively inexpensive and broadly available wireless technologies, connectivity seemed within economic reach of poor regions. And because the new wireless devices are increasingly based on advanced digital technologies, this suggested possibilities for the developing world to leapfrog some of the evolutionary steps taken in the developed world. Wireless thus promised to enable rapid, low-cost deployment of an advanced communication infrastructure.

The articles in this issue offer a timely examination of how these hopes are working out in practice. They span a variety of geographies, examining cities, regions, and countries in Latin America, Africa, and Asia. They focus on several applications of wireless technologies, ranging from cellular telephony to satellite and Wi-Fi. They examine wireless deployment and the associated economic and policy issues at a variety of levels of analysis, spanning a range of disciplinary approaches. The papers by Jonathan Donner, and Judith Mariscal and Eugenio Rivera examine the driving forces behind the cellular telephony boom in Africa (specifically in Rwanda) and Latin America, respectively. Donner's article discusses the microlevel impact of mobile phones on the social and business networks of microentrepreneurs in Kigali, Rwanda. Based on a detailed survey of calling patterns, it shows how access to a mobile phone is critical for small business owners to expand existing business relations. The article further suggests that access to this technology is key to the sustainability and success of microenterprises. Mariscal and Rivera offer a macrolevel perspective on the evolution of the mobile telephony market in Mexico since the 1990s. The authors document the successful diffusion of mobile services among the poor (and the business and regulatory strategies driving this growth) but raise significant concerns about the current market evolution toward the formation of a regional duopoly.

1. http://arnic.info/workshop05.php.

The other three papers—by Rohan Samarajiva, Francisco Proenza, and François Bar and Hernan Galperin—examine a broader set of wireless technologies, less diffused than mobile telephony but potentially as important. Samarajiva explores the role wireless has been playing in the deployment of access and backbone networks. Drawing on numerous examples from the Asia-Pacific region, he identifies the necessary economic and policy conditions for large-scale investments in wireless networks. The article reminds us of the key role of institutional factors in the deployment and adoption of new technologies. Along these lines, Proenza analyzes the potential of wireless and Internet telephony (VoIP) for extending services to rural areas in the developing world. By reviewing cases from a variety of national contexts, he also highlights the need for an enabling regulatory environment, and identifies the roadblocks that need to be overcome to unleash this potential. Finally, Bar and Galperin review the surprising and relatively unnoticed success of small-scale communication network providers (microtelcos) in Latin America. They show how these unorthodox organizations, by aggressively adopting low-cost technologies and innovative business models, often succeed in providing telecommunications services in high-cost, poor, or remote areas unattractive to traditional operators and where the traditional approaches to subsidized service have failed. The cases reviewed suggest the need to broaden the menu of ideas about service delivery arrangements in poor and remote areas.

Throughout these five papers, a common theme emerges: technological uncertainty and gray regulatory areas hold potential for unexpected, yet fruitful, developmental paths. All five articles underscore the fact that the development trajectory of technology is unpredictable and that its true potential often emerges from experimentation and practices by innovative organizations and often users themselves. This is true of the mobile phone, initially conceived as an expensive tool for sophisticated users, which is being redefined throughout the developing world as a sharable device, reappropriated by different users through unintended practices. As multiple examples in these articles demonstrate, this is also true of organizational experimentation with a broad range of technologies including the likes of unlicensed wireless and VSATs. The key lesson to draw is the need to create geographical, economic and regulatory spaces where users and network providers (old and new) can experiment with new technologies, so that we can discover information and communication technology's true potential to spur broad-based development.

As several of these articles demonstrate, these experimentation spaces often exist today in a regulatory gray zone. Neither fully legal nor illegal, they emerge at the margins of existing legal categories that have been designed for previous technologies. As a result, many of these innovative arrangements to bringing new technologies to the people who need them most, be they microtelcos cleverly organized to take advantage of local resources or free Internet telephony deployed to leverage existing Internet infrastructure, face a long series of regulatory and competitive hurdles. Yet, they hold the potential to solve problems that the fully legal arrangements have so far failed to solve.

The five articles assembled in this issue suggest many possible policy approaches. One response is to make these gray areas more legal. Examples range from interconnection and access rules that guarantee the right of nontraditional network providers to connect with the existing network, to the allocation of more spectrum bands for unlicensed, shared use by alternative last-mile providers. Such efforts would not only be critically important, but also retain an important shortcoming: regulators tend to be best at creating legal frameworks around technologies and uses that are well known, with the associated risk that they might undermine experimentation and exploration of the unknown. This suggests an alternative response: to design policies explicitly aimed at turning some of these gray areas into experimental spaces. Several of the policy recommendations in the articles presented here point in this direction. We hope that together, the articles in this issue persuade readers this is a direction worth exploring. ■