

Research Article

The Mobile Phone Store Ecology in a Mumbai Slum Community: Hybrid Networks for Enterprise

Nimmi Rangaswamy

nimmir@microsoft.com
Associate Researcher
Microsoft Research India
Sadashivanagar
Bangalore, India 560080
+91 9819049423

Sumitra Nair

sumitran@vt.edu
PhD Candidate
Department of Science and
Technology in Society
221 Lane Hall
Virginia Polytechnic Institute
and State University
Blacksburg, VA 24061
USA
(540) 449-3071

Abstract

We report on an ethnographic study of mobile stores' business practices in a slum community in Mumbai. The basic mobile phone store that sells small "talktime" (the period of billing per call) is graduating to repair, formatting, and maintenance of phone hardware and software. Central to this process of store expansion and skill building is the store entrepreneur. He forges relations with procurement channels and mediating agents, renewing existing ties and expanding business loops by interweaving social and business networks. We refer to these aggregations as "hybrid networks," and we highlight their maintenance as a critical resource governing enterprise potential.

By evoking the ecology of the mobile phone business in an urban slum setting, the paper draws attention to the following concepts: 1) the unique potential of ICTs as an entrepreneurial commodity, 2) the micro- and small enterprise (MSE) as a functional model for local technology immersions, and 3) local social networks as pivotal in expanding technology adoption and aligning with the needs of the low-income consumer. In essence, we locate the small mobile phone store as the site of convergence for the commercial expansion of mobile phone technology.

Introduction

The paper is an ethnographic examination of mobile stores and their business practices. Our field is the slum quarter of Behram Baug, an area of three square kilometers in suburban Mumbai. It is inhabited by a heterogeneous population of middle to low-income groups, households, and survival economies in 2008–2009. We began with this research question: What is the flow of mobile phone sales and delivery in the specific ecology of an urban slum? The initial question eventually led us to study small, self-owned shops that conduct trade concerning mobile phone consumption in the slum community. To understand the store's sustenance, we further focused on defining their "everyday" business networking and communication channels. We discovered four broad trends about business networking: 1) Primary business is conducted through local social networking; 2) networks evolve to expand services; 3) outbound networks mostly connect non-formal socioeconomic sectors of the city; and 4) networks integrate local business practices to service a range of needs. The rest of the article endeavors to substantiate the four trends.

Small entrepreneurs managing these stores become agents that actively mediate technology diffusion through the following ways: (a) by occupying a consultant role in the community; (b) by marshalling social networks and communication channels to expand business; and (c) by

bringing in new technology and learning new skills to meet and promote consumer demand. From the basic mobile phone stores selling small units of talktime to those that repair, format, and maintain mobile phone hardware and software, the entrepreneurs behind these stores assumed a variety of roles: They forge relations with procurement channels like gray markets, mediate between mobile phone companies (even multinational corporations) and the consumer, expand business loops while renewing existing ones, and encourage apprenticeships for relevant repairing skills.

We use “hybrid”¹ as the key word to explain the nature and creation of sociobusiness networks by the mobile phone store. It refers to their building and maintaining a composite set of connections between people and business entities, connections which in turn support business sustenance and expansion. Borrowing from Latour, we argue that the “network” is not a “thing out there,” but a conscious laying down of the net by purposive actors whose definition of the world “outlines, traces, delineate[s], describe[s], records, or tags a trajectory called a network” (1987). Strathern’s (1996) reading of Latour vests a more dynamic notion of “hybrid” tied to the notion of “performance.” “Performance” suggests that the more diverse or hybrid the network is, the more the actor will be able to forge connections. This “hybridity” of networks among mobile store owners is sustained and conjoined through face-to-face, neighborhood, community, national, and even transnational conversations, with the mobile phone being an important mediator, building networks of relationships across this wide spectrum to sustain socio-economic transactions. We further examine business practices leading to the business growth and diversification of the mobile phone store within a resource-poor and economically “marginal” urban neighborhood. Information is a key requirement for enterprise creation, growth, and survival. It is central to (a) procuring capital/credit, (b) acquiring skills, (c) working around infrastructure limitations, and

(d) tapping new markets. All of the above business resources, acquired through a diverse and wide social network, are critical to the expansion potential of mobile stores. In an everyday context, we know little about communication channels that support the information-search process or information flows in the MSE (micro and small enterprise) sectors, especially in supposedly resource-challenged locations, such as Behram Baug. Our study shows that slum locales are multiple, intersecting media zones for communication and information channeling. The mobile phone store acts as an “infomediary” (Duncombe, 2006), tying together a variety of social and economic resources. It snugly fits into these low-income and high-density habitats, linking global agents to local stores, and enabling purposive networking for establishing business loops and timely procurements.

We begin with a description of the context of business and social networking in the mobile phone enterprise by briefly explaining (a) the slum community’s social ecology, which in turn, results in mobile phone usage, and (b) the mobile store’s business ecology and resource channels.

Frameworks from the Literature Review

This literature review, by no means comprehensive, establishes context for our research findings. We consider existing work on the impact of telecom access, especially mobile phones, on both resource-poor environments and information have-less populations. We have benefited and drawn inspiration from three seminal research publications to undertake an ethnographic inquiry into a low-income neighborhood. While Horst and Miller’s (2005) ethnography attributes the rapid and ready adoption of mobile telephony among low-income Jamaicans to its successful absorption into the local forms of networking practices, Jack Qui (2005, 2009) discusses inexpensive Internet and mobile phone services and their close integration with everyday work and life

1. A close reference point to this term might be “social capital.” Refer to Bourdieu’s definition (1986) of social capital as the aggregation of actual and potential economic, material, social, and symbolic capital. Social capital has been recognized as an important element of individuals’ and organizations’ ability to access and effectively engage with ICT (DiMaggio & Hargittai, 2001; Fountain, 1997), with the size and nature of an individual’s network of technological connections and relevant social contacts developing and sustaining an individual’s use of ICT. While we believe that social capital is critical to the formation of networks, we pose “hybrid” as a concept expanding the scope of social capital, capturing the fluid, dynamic, and generative potential of the networks’ many intersecting forms.

of low-income communities in urban China. Horst and Miller use the term “link up” to refer to local networking patterns in mobile phone adoption. Qui introduces the term “information have-less,” denoting the vast urban migrant populations, micro-entrepreneurs, and youth, among others, increasingly connected by shared, prepaid, and recycled ICTs, mobile phones, and services. We explore the mobile phone store both as linking up a variety of resources for sustenance, and as an agent that identifies and harnesses key non-formal capacities even among traditionally “information have-less” groups in this process.

Our data analysis is largely informed by two theoretical frameworks (see Table 1). The first is the conception that ICTs (including an expanding array of mobile phones, computers, Internet, and other telecom and portable digital media hardware and software devices) can be “deployed effectively to close the ‘digital divide’ between, the ‘haves and the have-nots’ by addressing issues of their effective access and use” (DiMaggio & Hargittai, 2001). The second is the conception of ICTs as meaningful tools bearing social value, value which has been necessarily brought about “through conscious acts of configuration, mediation, and active interpretation by social actors” (Dholakia & Zwick, 2004, p. 129).

If the “digital divide” can be seen as a practical embodiment of the wider theme of social inclusion, it points to a convergence of the information society and inclusive society discourses into the popular debate over the potential of ICTs to either exacerbate or alleviate social exclusion (Selwyn, 2004). This follows the argument over a digital divide in terms of unequal nations with one in terms of inequality within nations further divided by socioeconomic status, gender, and even household size. Selwyn further qualifies the need to recognize crucial issues of the digital divide, not as only technological, but as social, economic, cultural, and political phenomena. The need of the hour is to move research away from the current predominance of “pundit suppositions, travellers’ tales and laboratory studies” (Wellman, 2001, p. 2,031), and toward robust, survey-based, and in-depth qualitative work that begins to unpack the complexities of the digital divide (DiMaggio & Hargittai, 2001).

In this article, we demonstrate some conceptual limitations in the conventional dichotomous notions

of the digital divide by expanding on (a) what is meant by ICT, (b) what is meant by “access,” (c) the relationship between “access to ICT” and “use of ICT,” and (d) a consideration of the consequences of engagement with ICT. As Selwyn argues, a focus on content rather than technological platform may be a useful point of reference for shifting the digital divide debate to include information, resources, applications, and services that individuals are accessing via new technologies. Issues of time, cost, quality of technology, and use-environment are all crucial mediating factors in people’s access to ICT (Davis, 1993; Selwyn, Marriot, & Marriot, 2000). It is important here to acknowledge the importance of an individual’s perceived (or effective) access in practice over theoretical (or formal) access to ICT (Wilson, 2000). Similarly, material access to a technology needs requisite skills, knowledge, and support for effective use (van Dijk, 1999). Engagement with ICT is therefore less concerned with issues of access and ownership, and more with the ways people develop relationships with ICTs and how they are capable of making use of the social resources that make access usable. Combining the works of Berghman (1995), Oppenheim (1998), and Walker (1997), we purport a framework to use various dimensions of participation in society that *can be* seen as constituting “inclusion.” These can be grouped as: production activity, an economically or socially valued engagement, such as paid work, education or training, or looking after a family store; and social activity, engaging in significant social interaction with family or friends and identifying with a cultural group or community (Selwyn, 2004, p. 350). We suggest the mobile phone store as a site of inclusionary performance that meshes the social and the productive toward enterprise-expansion by forging local-global resource networks. ICT delivery in development can either directly contribute to the assets of the poor or support the *infomediaries* (Duncombe, 2006), i.e., structures and institutions that help *build* new assets for the poor. References in ICT4D literature seek to understand how human networks and organizations such as MSEs can act as infomediaries to create conditions for ICT adoption. Working definitions of MSEs vary across geographies and researchers (Donner, 2008; Mead & Leidholm, 1998). ICT4D discourses perceive mobile phones as a direct income-generating resource for the poor, with new models of ownership and access (Sey, 2008). Donner and

Table 1. Main Conceptual Tools.

Framework	Explanation
1. ICT for development	1. Closing the digital divide: ICTs and social inclusion 1.1. Extending use and access in hitherto excluded communities 1.2. Forging a sustainable business model
2. Social configurations of technology	2. Mediation, interpretation, and configuration by social actors 2.1. Key players 2.2. Patterns of configuration

Escobari (2009), in a systematic review of research on the use of mobile telephony by MSEs, offer an assessment of how mobile phone use influences the network of interdependencies and relationships external to the enterprise, including producers, traders, wholesalers, retailers, and end-customers. They also cite Jagun, Heeks, and Whalley’s study (2008) describing the mobile phone’s contribution to the maintenance of effective supply chains in Nigeria’s traditional handloom industry: The authors, though skeptical of broader benefits, note “process” benefits, such as reduced turnaround time, and “structural” impacts, like improved trader-weaver relations. In developing countries, this has fueled the micro-entrepreneurial model, with individuals offering service outside the formal telecenter system (e.g., in convenience stores, hair salons, and other small businesses). The popularity of the mobile payphone business points to the aspirations of individuals to gain mobile phone ownership, to changes in the nature of the industry, and to the growth of mobile phone micro-enterprises in the developing world (Sey, 2008).

We suggest that the category of Qiu’s “information have-less”—denoting the vast migrant populations, micro-entrepreneurs, and youth, among others, increasingly connected by cybercafés, pre-paid service, and used mobile phones—needs closer investigation. In our study of the slum community of Behram Baug, we outline the “information have-less” and their unique relationship with ICT adoption, one that strengthens the community’s mobile telephony access by feeding the evolution of the mobile phone enterprise.

India is an increasingly urban country, with over

half a billion people expected to live in towns and cities by 2020 (Census of India, 2001). More than one-fifth of the urban population lives in slums,² and in some major cities, they account for almost half the population, with large numbers of migrants continually arriving from the countryside in search of better opportunities. Many of the slum dwellers, lacking the skills and capabilities required in new growth areas of the formal economy, are usually absorbed in low-paying informal sectors. Support from family- and community-based networks and safety net systems (developed over generations “back home”) are re-created in the new urban neighborhoods, and sometimes follow occupational or caste groupings (Wood, Loughhead, & Mittal, 2001). Sarin and Jain (2008), Zainudeen, Samarajiva, and Abeysuriya (2005), and Beyes et al. (1999) point to the large majority of financially constrained mobile phone users in India, Sri Lanka, and Bangladesh, citing “social cohesion” and kinship as critical not only for the mere ability to stay in touch, but as contributing to future business partnerships. All these factors encourage the thriving of MSEs in dense urban slum sectors through information systems embodied in local social networks. Therefore, both the decision to invest in a mobile phone and the value derived from it are likely to depend on others in the respondents’ economic and social networks—“the network externality” (Wood, Loughhead, & Mittal, 2001). We trace the nature of some of these networks.

Methodology

We employed ethnographic methods to understand the operation of the mobile phone store in its

2. See <http://www2.unhabitat.org/programmes/guo/statistics.asp> for a definition of “slum” by United Nations agency UN-HABITAT.

spatiotemporal context.³ These comprised a variety of qualitative methods, including open interviews, observations of community life, and baseline surveys of business units, all aimed at achieving “thick description” (Geertz, 1973) for a deeper understanding of the research question. The study was conducted in two phases: Phase 1, February–July 2008, consisted of observations and semi-structured interviews with civic and political leaders (five people) of Behram Baug, as well as with workers and owners of small businesses (20 people, including eight respondents who do not manage mobile stores) who may or may not be using the mobile phone for enterprise. Our aim was to speak with key informants who occupied important leadership positions and represented a sample of ICT-enabled businesses, such as mobile phone stores; PC-using businesses like photo studios, lottery sales, and online commerce; and VCD/DVD parlors. These provided a contextual basis for identifying specific respondents for the second round with more in-depth and focused interviews.

Public spaces like shop fronts, households, traffic intersections, and crossroads, as well as communal spaces like street corners, weekly street bazaars, political gatherings, and religious events were observed to record the “everyday” life of Behram Baug. This process shed valuable light on the political economy of the locality. The slum quarter in Behram Baug stands on unauthorized land currently in the process of being regularized by the government (and attracting private real estate attention). Residential quarters are divided sharply along religious lines, but those lines do not extend to the organization of shop-space fronting the slum neighborhood (there have been no instances of religious strife, though communities mark and draw social boundaries). A third of the population consists of migrants, mostly male. Along two of its borders, the slum quarter spills into the upwardly mobile middle- and upper-income neighborhoods, offering a deep contrast and aspirational vision for the slum community’s residents and entrepreneurs.

Phase two involved more in-depth, semi-structured interviews conducted in February–June 2009. A random selection of the 30 small mobile phone stores aided in investigating everyday deal-

ings, client demands, and business networks, to note the broad variety of communicative resources and social networks that supported enterprise-building. We undertook several repeat visits to each store for observations and interviews (with an average of 30–90 minutes per interview) with store owners. Some of these respondents also emerged as key informants and field guides, providing valuable insights into the stores’ business practices. The initial focus of the study was to observe social networks connecting the diverse mobile store business dealings. From a broad understanding of the stores’ business ecology, we narrowed our focus to understanding the sales of mobile handsets and recharge coupons, and repair and service business practices. Of particular importance were practices aimed at procuring capital, shop space, products and hardware; at acquiring the skill to service phones; and at tapping new local demand. All interviews were audio-recorded and transcribed. We broadly coded data using ATLAS-ti software, and also organized the data manually into thematic matrices to check for emerging patterns in a transparent manner. We coded empirical data to reveal connections between the survival, sustenance, and expansion of the store and its socio-business networking capital. These informed our primary analytical concern of linking the potential of ICTs as entrepreneurial commodities in MSEs to servicing the local needs of the bottom-of-the-pyramid consumer. We further coded pivotal business elements, such as expansion of skills to repair, maintain, and service ICTs, as being key in immersing technology adoption and use. We undertook detailed profiles of the store owners and their business histories to note critical phases in store diversification and expansion, in order to map trends: (a) the expansion of affordable services, and (b) increase customer adoption.

Findings

Following DiMaggio’s call to employ survey-based and in-depth qualitative work to unpack the complexities of the digital divide, we present our ethnographic findings in Behram Baug.

In this section, we provide a short description of the slum community’s social infrastructure, promoting a diversity of mobile phone micro-enterprises.

3. *Our analysis does not employ formal social network analysis techniques (exemplified by social networks based on network theory).*

We orient our research efforts toward explaining the transformation of social networking capital into a vital entrepreneurial resource.

Behram Baug—An Overview

To demonstrate the nature of business networking in the community, we begin by describing Behram Baug's sociospatial context and its entrepreneurial milieu. Wellman and Leighton (1979) put forth a "network analytic perspective" mapping the slum as a unified territory, a community of personal ties, social support, and solidarity. Evident in the social evolution of Behram Baug's slum quarter is an assortment of habitats that have been shaped by "waves" of migrants from all over the country seeking livelihood in Mumbai.⁴ These habitats are arranged around ethnic status (populations cluster by regional/linguistic/religious affinity) and associated business activities (clusters of automobile repair, metal/hardware/plywood shops, etc.). The slum is ringed by the middle-class and upmarket, privileged building spaces and residential complexes. These areas are serviced by the Behram Baug's slum economy by way of domestic and household services, office and telecommunications services, and couriers outsourced to smaller vendors (photocopying, photo studio, mobile phone recharges and connections, even handsets). This interdependency between the slum quarter and the more privileged social sectors provide the essential economic impetus for small businesses in Behram Baug. The two arterial roads bordering the slum quarter lead into the city highways, upscale residential and office buildings, and two upscale malls and multiplex cinemas. The myriad bylanes branching inward from the arterial roads house innumerable tiny kiosks/stores; vending stalls/carts; and single-room fabrication, metal, and hardware industry shops. On specified days of the week, the two arterial roads transform into a make-shift street market where cheap garments, Chinese-made watches, and other accessories are sold. Local political and civic leaders estimate the average income per person in this locality to be around 3,000 to 4,000 Rupees (US\$60–\$80) per month.

Despite the extreme resource crunch and skeletal digital infrastructures, small businesses in Behram

Baug draw on an alternative resource framework: the rich network of social and commercial interactions that are mediated by both people and technology. Shops, stores, and servicing centers are embedded in the larger informal economy not only of the immediate and adjoining neighborhoods, but extending to the sprawling metropolis of Mumbai through diverse and related social networks. In the course of the article, we identify a spectrum of services enabled by the mobile phone store through a variety of business-related communication networks. In the next section, we present a classification of the types of mobile phone stores in Behram Baug based on size and structure, and move on to discuss the range of services they offer.

Local Social Networking as an Asset: The Business of the Mobile Phone Store

Based on the size and structure of the business, we categorize our sample of 30 stores into four types: (a) mobile basic, (b) multibusiness general store, (c) multibusiness mobile store, and (d) mobile repair store (see Table 2). Out of the 30, four fall into the mobile basic category, selling only small top-ups and recharge coupons. These are tiny stores, usually attached to shops that repair domestic appliances, stock and resell old newspapers/magazines, or sell tea and candy. These view the mobile store as an add-on to the primary business. Eight are multibusiness general stores that offer mobile coupons and accessories as appended businesses. These typically attach mobile phone services to existing businesses, like a medical store, a travel agency, or a provisions store. Eight are multibusiness, mobile-only stores that sell all kinds of mobile recharge services, SIM cards, handsets, and accessories. Another 10 are multibusiness mobile phone shops that also service and repair mobile handsets. This last category shows the expansion of skill-set and enterprise potential that can occur as basic stores transition from coupon-selling to advanced handset hardware/software repair.

Mobile phone-related businesses may sell handsets and accessories of all varieties, ranging from branded to "China-made"⁵ and refurbished phones. Additionally, they may sell SIM cards, pre-paid con-

4. We refrain from calling them ghettos, since the boundaries between the communities are loosely marked, porous, and defined by dynamic interactivity.

5. A basic Chinese-made handset can be procured for US\$10, while a second-hand Nokia color handset can be bought for as little as US\$25, less than a quarter of the market price.

Table 2. General Profiles of 30 Mobile Store Owners.

Owner #	Main Business	Age	Education/ mobile repair skill	Attached Business
1	General store	27	10 th grade/formal + peer learning	Coupons/accessories
2	CDs/Public call office (PCO)	23	10 th grade/formal + on the job	Coupons
3	General store	39	10 th grade/—	Coupons/accessories
4	Spice store	20	10 th grade/formal + on the job	Coupons/handsets/accessories/Xerox/spices
5	Perfume store	28	5 th grade/self-taught	Handsets/accessories/perfumes
6	Mobile coupons	29	10 th grade/apprenticeship	Handsets/accessories/repair
7	Mobile coupons	—	10 th grade/learned from cousin	Handsets/accessories/repair
8	Xerox/lamination/scanning/printing	28	8 th grade/—	Online/ticketing/billing/mobile recharge/accessories
9	Floor tiles	24	12 th grade/—	Coupons/accessories/online/ticketing/billing
10	PCO	35	10 th grade/—	Coupons/online/ticketing/billing/accessories
11	PCO	28	8 th grade/—	Mobile coupons/handsets
12	Tobacco	23	10 th grade/—	Coupons/PCO
13	Bakery	27	12 th grade/—	Coupons
14	PCO	25	10 th grade/—	Coupons/handsets/accessories/PCO
15	Mobile coupons/handsets	30	—	Accessories/Xerox/deodorant
16	General store	19	9 th grade/peer learning	Mobile coupons/repair handsets/accessories
17	General store	32	Discontinued college/—	Mobile coupons/handsets
18	Kitchen spare parts	45	10 th grade/—	Mobile coupons
19	Photo studio	33	10 th grade/—	Coupons/PCO
20	Medical store	34	10 th grade/—	Coupons/online/ticketing
21	Garment shop	22	10 th grade/—	Coupons
22	General store	32	Discontinued college/—	Coupons/PCO
23	Stationary	—	—	Coupons
24	Mobile coupons	29	10 th grade/—	Handsets/accessories
25	Medical store	42	10 th grade/—	Coupons/stationery
26	General store	23	10 th grade/—	Coupons/PCO
27	Mobile coupons	26	5 th grade/peer learning + hands-on	Handsets/accessories/repair
28	Mobile coupons	27	12 th grade/formal + hands-on	Handsets/accessories/repair
29	PCO	31	10 th grade/—	Mobile repair
30	Photo studio	33	—	Mobile coupons

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nections, and recharge/top-up coupons, as well as participate in the newly mushrooming mobile phone software/hardware repair and software-download businesses. Given the neighborhood's customer profiles of low and unsteady income, there is a vibrant rotating second-hand mobile phone handset market, along with a huge demand for tiny talktime recharge denominations (as low as 25¢). New schemes of the small talk-time coupons, top-ups, and low-end SIM cards yield small and steady profit margins for the store. Shopkeepers work hard to develop a dedicated customer base. As one of them put it, "It rains talktime top-ups everywhere. A lot depends on store visibility and word-of-mouth networks. We need to be vigilant and dynamic in stocking our wares." Store owners procure handsets by forging relationships with wholesalers in the established gray markets of Mumbai. One of our subjects, Irfan, 25, said

[T]he only way to begin is by establishing personal relations with sellers in the markets. This has been going on, and my neighborhood has contacts and routes to gain entry and begin an enduring business relation . . . I can even call up to get delivery of goods.

He added, "I keep handsets more as ready advertisement for the shop's business, and they attract local youth keen to try out new features and experiment with them . . . This can work out to an eventual sale." Formalized franchisees of handset-makers like Nokia and a few larger shops refuse to deal in used handsets, due to the high probability that they are stolen goods. While no shop owner admitted to the fact of dealing in stolen devices, there were open allusions to the presence of the practice when a store owner said that he "would rather trade in cheap yet new mobile phones than risk the humiliation of bad repute in the neighborhood."

It was difficult to investigate and identify exact numbers in the entire slum quarter for different types of stores. We obtained approximate counts from two Vodafone agents on their everyday visits to the stores to refurbish coupons and SIM cards. One of them said, "We see stores doubling in the six months or so . . . see this old man trading and re-cycling old newspapers . . . he just became a Vodafone recharge seller." According to the two agents, Behram Baug has approximately 100 mobile phone businesses, of which 50 are basic stores sell-

ing a range of small "talktime top-ups," in denominations as small as 25¢, that also stock used and new handsets acquired from the "gray" markets. Behram Baug houses a diverse mix of mobile phone stores: larger stores that sell a variety of phones available at "white rates," complete with bills and warranty cards, to small shops stocking "Made in China" phones with no warranty. (Even though branded phones are also made in China, the allusion to their being made in China is euphemistic of cheap and use-'n'-throw devices.) Handset dealers informed us that "all kinds and varieties of phones, from the branded to the China-made" make good business in the used/refurbished markets. Abdulla, 28, whose store display reads "A-Z Refilling," said:

There is a huge demand for rotating handsets, and a strong clientele, investigating at regular intervals and looking for up-gradation or just a change of their older handsets. They can be had cheap and, if the client is a known person, we even give away for credit. Young people of Behram Baug are a huge market for 'China Phones'—that have the kind of features that are 'unimaginable'! [These handsets only] work for some six months—but then, the prices are a dream.

Abdullah added that he maintains a client-base by constantly exchanging information about available models for used mobile phones: "People sometimes have a specific model in mind and request to either look for one or notify them if I managed to find one . . . How else would you get a Nokia 'N' series for US\$30?"

Most of the mobile store owners concurred that almost all of the 10,000 households in the slum have at least one mobile phone. They also made an educated guess that two-thirds of these have two or more phones. The reason for this is that the bulk of migrant labor settled in Behram Baug find them irresistible; they are cheap, reliable, and a stable communication channel. Even within this market of individual, small-value consumption, large national and multi-national service providers compete to deliver a bouquet of deals aimed at capturing volume, usually bundling services and calling features. At the store level, many of these further turn into informal arrangements between recharge vendors, shop owners, and clients. For example, many store owners buy recharge coupons in bulk, making a

Table 3. Main Concepts and Relational Facets of Empirical Evidence.

Frameworks	Explanation	Empirical Evidence
1. ICT for development	1. Closing the digital divide: ICTs and social inclusion 1.1. Extending use and access in hitherto excluded communities 1.2. Forging a sustainable business model	1. Issues of access 1.1. Who are the main actors embedding ICTs for adoption and use? 1.1.1. Micro-entrepreneurs of ICT-using businesses—in this case, the mobile phone store owner 1.2. Capacity-building to sustain and grow business 1.2.1. Social capital (space, money, skill, customer loyalty)
2. Social configurations of technology	2. Mediation, interpretation, and configuration by local actors	1. Processes that embed ICTs—in this case, the business processes of the mobile store 1.1. Social networking (local) 1.2. Liaising (agents, both local and multinational) 1.3. Apprenticeship (local)

higher profit margin, passing the benefit on to a loyal customer by charging a little less than his neighboring store. With low profit margins, the income range for each store is between US\$500–\$1,800 per annum, depending on the size, scale, and spectrum of services.

Evolving Networks: Expanding the Mobile Phone Business

We also mapped expansion routes of the mobile store. In Behram Baug, as in many urban slums, mobile phone services abound, and shop owners occupy a critical role in exposing and disbursing services to the large low-income consumer base. The basic stores provide SIM cards and various pre-paid options and air-time broken up into small units—regular scratch cards, vouchers, and electronic transfers. Though networks enable subscribers to directly buy and transfer airtime, these end-users typically rely on wholesalers and retailers to recharge phones. Our findings support Sey's (2007) conclusion that this is primarily because most end-users are either not willing or not able to top-up their phones themselves (as Sey [2007] notes in Ghana). When asked what type of recharge he liked to deal in, the Chauhan brothers, owners of a mid-sized mobile multi-store, said "[We] prefer selling more through the demo card [a pre-loaded, large talktime coupon to enable transfer] that companies give to shop

owners and at discounted rates, to transfer talktime to clients . . . There are a lot of people who do not have any idea how to scratch and feed in the pin and recharge . . ." When we probed why that is so, the response was that, "Most of my clients are male migrants from the countryside and illiterate . . . All this scratching and adding the pin is beyond their comprehension." This practice also deepens the shop's customer base. Many begin selling airtime, cashing in on attractive prepaid billing offers like "free lifetime incoming calls."

Delving into the business histories of the shops, we noted that store expansion received a boost around five years ago with the steep drop in mobile coupons and metered talktime. Stores forged ways to meet and grow demand by offering refurbished or used handsets; new branded or "China-made" handsets; and mobile phone accessories like handset covers, memory cards, and headphones. Brothers Yunus, 35, and Yusuf Chauhan, 28, began a small general store 20 years ago along a busy intersection, where leading mobile phone product and service providers publicize heavily with free promotional materials, such as posters, banners, fliers, or audio jingles/announcements. Yunus said:

I saw the potential for increased footfalls to my store and began stocking more than I intended to . . . and steadily expanded from essential to di-

verse and packaged food items moving on to life-style goods like inexpensive perfumes and fashion jewelry. Fifteen years ago, I attached a public telephone call office . . . became the then buzz word for telecom . . . The mobile phone changed it all for me eight years back.

Working from the same business acumen, the brothers steadily scaled up their mobile phone product offerings to SIM cards, recharge coupons, handsets, and accessories, ultimately phasing out the general store.

We thus find that the mobile phone store bears a unique set of opportunities and pressures for the small entrepreneur: a booming business based on low-value, high-volume consumption. We now discuss the sociobusiness ecology supporting the establishment, maintenance, and growth of the mobile store (see Table 3).

Discussion

The Non-formal as Foundational Practice: The Mobile Phone Business Ecology

Mobile phone businesses in emerging markets are deeply embedded in the structures of the non-formal economy (Moyi, 2003). The paucity of formal organizations and the inaccessibility of organized market networks to small-scale entrepreneurs often drive them toward informal networks (Lugo & Sampson, 2008). Ilahiane and Sherry (2008) describe street entrepreneurs operating in the dynamic underground economy of new, used, and black-market ICTs in Morocco. The authors discuss a growing entrepreneurship trend and the implications it carries for the informal sector enveloping global flows of goods and services.

In developing countries, entrepreneurs operate in business environments characterized by limited and fragmented information on markets, technology, policy, regulations, and finance—similar to the business culture epitomized by Behram Baug. Businesses often resort to non-formal sources for critical infrastructural inputs like capital, shop space, and hardware. Behram Baug's mobile store businesses predominantly source all of these through social networks, and only rarely through certified formal channels such as banks, employment agencies, or branded markets. In the multi-business and repair stores, most employees are recruited from their kin group or from originary village networks. This intermeshing of social and entrepreneurial worlds is car-

ried out by what we term the keyword for this paper, "hybrid networks," the critical resource base-supporting enterprise.

Capital, shop space, procurement of phones and accessories, and housekeeping are all conducted using non-formal practices. Interviews delving into business history revealed that 21 out of the 30 sample stores had expanded their slate of mobile phone services along with other businesses, and that 10 had evolved into mobile hardware repair businesses. See columns 2 and 5 in Table 2, which show enterprise and service expansion details for each of the 30 stores. We quote from some of these store owners in this section.

We offer a quick overview of existing business that later attached mobile phone services. Four out of our 30 sample stores offered public telephony through a landline and call-booths, six offered photocopying services, two sold stationery, and two were small stores selling general purpose items. One handled railway ticket bookings, one was a bakery, one was a travel agent, and one was a photo studio. Another rented space from a small restaurant to conduct watch repair and maintenance services, and the smallest one had a maintenance service for household items like stoves and grinders. All the businesses were conducted under a single license, i.e., some of the business practices were unaccounted for. Bookkeeping, billing, and accounting practices were also not segregated. We observed many client transactions go unbilled. Shop-floors/spaces are tucked away in nooks and crevices of existing business outfits. Homes double up as storage and office space, and public streets are spaces for client exchanges. Mudassar, 23, a watch repairer and one of our principal interviewees, expanded into the mobile phone business by leasing out a 4-foot by 4-foot space as shop floor at the entrance of a popular resto-bar. In this small space, he is surrounded by a mix of watches, mobile phones, and promotional banners from all the major service providers. His contract with the restaurateur is a spoken agreement of income sharing. He said, "I am at the center of this universe on the main road . . . I know everyone that sells anything to do with the mobile."

The relationship between the large service provider and the small shop owner is mediated by the former's sales and distribution agents, who visit these stores every day. The shop owner is provided with promotional material about the various pack-

ages. He also sends SMSs about the various new schemes when they are launched, and these are then backed with personalized daily sales and distribution visits. Demonstration cards, or “demo” cards, are offered, allowing the shop owner to make electronic transfers at the service provider’s expense, and to have the additional incentive of rock-bottom rates for his personal use. A storekeeper says, “This is perhaps the best business, given the minimal investment and effort it demands. Though profit margins are narrow, nobody steps on another, and everyone gets a piece of the pie.” Recharge coupons, SIM cards, etc., are available on credit. The storekeeper earns a percentage that varies from 8–10% of the amount sold—the rates vary depending on the types of talktime and/or connection sold, and on the arrangement between local vendors and company agents. Despite standard pricing models formulated by companies, prices are rendered negotiable based on established relations, older business linkages, location, estimate of potential for future business, etc. Money transactions with mobile phone companies are standardized and visible, but discounts and profit-cuts are negotiable and invisible, obtained out of regular procedures through informal negotiations. These provide the window for small, but valuable, profits to the local vendor. On average, a small store selling top-ups can make a profit of approximately US\$125 per month.

A storekeeper who has some shop space and a mobile phone needs to do very little in order to enter the mobile phone recharge business, and a store can stop expanding then and there if the owner chooses. Hence, it becomes critical to garner entrepreneurial resources to move from the simple and easy business of selling recharge coupons to the more complex business of repair and service. The interweaving of non-formal business practices with formal economic structures is critical for allowing the mobile phone trade to fetch and employ resources for enterprise-building and expansion. The next section focuses on this process.

Network Integration: Hybrid Linkages and Enterprise Evolution

In their review of 14 rigorous studies of mobile telephony among micro and small enterprises (MSEs), Donner and Escobari (2009) focus on internal processes and external networks of relations that are valuable for enterprise survival. The authors go

beyond conventional wisdom, identifying the following potential network impacts: increased availability of information, entry of new actors (buyers and sellers) into the markets, the possibility of bypassing middlemen, and the chance to incubate new businesses. Though mobile phones clearly offer distinct benefits to MSEs, the authors do not find strong evidence supporting a transformation of business through up-scaling, diversification, or expanding the client-base. We employ a different argument in our study to propose that the mobile phone store business is different (from businesses where mobile phones are merely *one* of the critical resources) because of both its rapidly expanding market across income brackets and the industry’s constant technology changes. The small entrepreneur in telecom has to constantly reinvent the business by pulling resources from a heterogeneous mix of networks, while at the same time, catering to the market. The two questions we explore are: 1) Which of these mobile phone businesses expand? and 2) When and how do MSEs expand, and what are the networks vital to this process? Based on his intimate reading of clients, Mudassar (the watch-repairer and small mobile store entrepreneur) believes that, in the distant future, while SIM card sales may hit a plateau for the simple reasons of finite demand, the sale of handsets, both new and used, and the sale of talktime, will continue to grow. We provide evidence of how the mobile phone store can be optimized for this trend: For instance, the low levels of investment required for the talktime business are made good by increasing the client-base through persistent contact, actively promoting attractive deals by official mobile service providers, and offering special discounts on the market price. The growth trajectory of business places a high value on such informal meshing of commercial and social networks. Similarly, the proliferation of handset sales in Behram Baug has led to the mushrooming of associated businesses, including the sale of accessories (especially mobile memory cards) and repairing phones. The sustainability of these expanded businesses often depends on entrepreneurial ability to convert social relationships into commercial opportunities. Our ethnography bears witness to the following: shop space largely acquired from family, kin, or friends at rock bottom rentals; shop labor from similar sources; maintaining a wide network of salesmen-agent contacts in the various mobile service providers (who

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are, according to Mudassar, “the vital link in the mobile business loop”); building a deep client base; and garnering non-formal skill-building avenues to venture into the repair and maintenance business. We discuss the last below.

In the last two to three years, mobile phone repair has become a lucrative business for mobile store owners to cash in on the considerable demand for handset maintenance. Four of the store owners trained in repair through a formal course at an institute. The courses are expensive, an average of US\$300 for a four-month course. Most students had to borrow money from family or friends or dip into their savings. Though all of them found the training to be insufficient, it did give them initial impetus to enter into the repair business. They admitted to self-training on the job or to finishing their training through peer-learning. Four owners self-trained on a home PC (one on his own machine and three on a friend's). One had first apprenticed in a friend's store. The last store owner in this list hired a skilled person, but finding this an inadequate solution, paid a nominal amount (US\$40) to apprentice him in a bigger shop in the nearby commercial district. This store owner, Iqbal, who runs his store in a small nook of the slum with his cousin Irfan, both in their early twenties, said:

I learnt from an institute teaching this stuff . . . It's in Jogeshwari, the next Metro station from here . . . I picked up skills on the job and I can call myself . . . sort of an expert . . . We now get so many clients that we have employed this boy, a guy who came from our native place a few years ago and been learning repair in my relatives' shop in a crowded market in an adjoining suburb.

Typically, services include software “flushing” (reformatting) services, refurbishing used handsets for resale by replacing damaged hardware parts, and servicing dead or malfunctioning phones. With regard to the latter, Iqbal said, “It's usually simple reformatting issues related to the display panel and audio quality, but we do get issues related to network connection, keypad dysfunctions, and hanging features.”

Handset repair's status as an increasingly attractive option is linked to the emergence of training institutes all over Mumbai, and in the neighborhoods of Behram Baug. These charge a fairly hefty fee as tuition, anywhere between US\$300–\$500 for a two-month course. The bigger stores outside the

slum quarter offer unpaid apprenticeships to those willing to learn valuable repair skills. These apprentices could eventually graduate to become paid employees or independent shop-owners. We thus find a well-developed sociobusiness network ecology that supports mobile store owners, repair experts, training institutes, and customers. The Chavan brothers, observing the mushrooming repair services in the neighborhood, sent for a cousin from their hometown and found him an apprenticeship in a friend's bigger mobile repair shop in the adjoining commercial district. They said:

We are in the midst of low-income populace who do not throw away anything, even leftover food. Everything is preserved and re-used until it can no longer be of any use . . . There is a large market to refurbish and maintain mobile phones . . . people drop it, the Bombay monsoon drenches it, and parts need to be replaced. We regularly go to a shop downtown to buy phone parts.

They offered an insightful explanation for storing used handsets and maintaining a steady set of client network,

Spare parts for phones are not easily available. We often buy used phones to remove and re-use healthy spare parts to service phones that come in for repair. Sometimes, we stock the functioning parts of phones that are beyond repair.

We cite two mobile store owners, Ganesh, 29, and Ghaus, 20, as examples of start-up entrepreneurs who built efficiently on the neighborhood sociobusiness ecology of the mobile phone store. Both are dynamic entrepreneurs who, in the last five years, have integrated extra- and intra-neighborhood and kin networks to establish and expand business. Ghaus lives in Behram Baug and began his mobile store two years ago at a commercial complex close to the family spice business, offering a range of products and accessories. He apprenticed in two shops in the complex, where he picked up handset hardware repair skills, and then moved his shop to Behram Baug six months ago. He said, “Basically, I moved because the commercial complex became too expensive and competitive for us . . . space is cheap, and we live here.” Ganesh, who lives in an adjoining suburb, set up shop in Behram Baug due to the familiarity he developed with the area during his school years.

I know every nook and cranny of the place and several mobile phone shop owners, dealers who

come from the hardware markets in town to sell handsets, accessories, and even spare parts. Mobile phone company agents are my buddies, and some went to school with me.

He began photocopying services seven years ago with refurbished HP photocopying equipment. Five years ago, he moved to stocking mobile phone products and services, employing his brother, who took a formal course in mobile phone repair at an institute, paying a fee of US\$500 for a six-month course. Ganesh says:

We did think of apprenticeships, but my brother wanted to learn quick and move into business. He said, "I will begin to earn sooner this way than spending two years at a shop learning the skill without a salary." I took a small loan from my family and friends to pay the fees, but we have been earning small but steady from his skills.

Both Ghaus and Ganesh pitched business stakes in the evolving mobile phone sociobusiness ecology of Behram Baug, and they did so by building new business networks, harnessing and transforming older social networks into commercial partnerships.

The mobile store business model in Behram Baug thus points to the two-way augmentation of socio-business potential: First, as in the cases of Ghaus and Ganesh, the mobile phone business mediates and transforms both new and old communication channels. We particularly note the harnessing of friendship, kinship, and past personal histories for business partnerships. Second, the vignettes described in this section point to the transformative role of the mobile phone business, initially as a new commercial opportunity that allowed easy and relatively inexpensive entry to micro and small enterprise ventures, and next, as a business built and grown on tapping formal and non-formal modes of refurbishing phones, procuring, and even transmitting repair skills. Thus evolves the local mobile phone repair ecology: The ecology addresses and circumvents challenges posed by infrastructural and commercial constraints through translating rich "social networking capital" into business resources.

Conclusions

We focused on the opportunities and expansion trajectories of small entrepreneurs in the mobile phone business within the context of an urban slum. We explained our conception of entrepreneurial socio-

business networks as essentially hybridized spaces populated by a variety of business partners, such as employees, clients, agents of established mobile phone companies, and agents who broker gray-market hardware and skill training. We analyzed these against a background of burgeoning demand for mobile technology in low-income settings.

The sustainable adoption of a technology can be understood as similar to the evolutionary process by which a new organism finds a niche within a broader ecology (Dearden, 2008). Authors such as Warschauer (2003) have argued that successful uptake of new digital technologies in development situations requires physical, digital, social, and human resources that are relevant to people's lives, skills, and aspirations. It is significant that, in the case of the mobile phone store, the four resources are not present in perfect proportion—their degree and type are negotiable. Struggles with infrastructure are built into the very fabric of urban slum life; these challenges are met by dexterously weaving together resources, organizational routines, and skill-building. The mobile store business relies heavily on informal business practices and social networking to find its way around infrastructural hardships. The "archetypical" mobile phone store is a bricolage of gray real estate (space), infrastructure (electricity), and hardware. The latter is a motley collection of SIM cards; recharge coupons; branded, spurious, used, recycled, and stolen handsets; batteries; chips; memory cards; and other accessories. Also critical are person-specific linkages with agents of multinational service providers, a sharp sense for targeting and educating the local market with "schemes/deals," and personalized services to lure and maintain clientele among largely bottom-of-the-pyramid consumers.

The widespread functional model of the mobile phone store in developing economies offers lessons on those characteristics that are categorized as resource-richness and resource-poverty with respect to ICTs. We propose that a site such as Behram Baug offers significant insights for ICT4D research, and that it represents a viable, yet inexpensive, commercial model of a successful ecology for technology adoption for three reasons. First, it explains novel delivery mechanisms and local patterns of immersion for ICTs. Second, it displays the creative potential of an agent of technology dispersion, the mobile store owner, to shape use and ownership of

mobile technology adoption. Third, arguments about the need for large infrastructural investments for the success of ICTs are brought into question by the ecology of the mobile phone business in Behram Baug. This thriving environment both reveals the unique potential of ICTs as an entrepreneurial commodity, and shows the MSEs as a functional model that can align technologies to the needs of the bottom-of-the-pyramid consumer. ■

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