

ICT for Mesh-Economy: Case-Study of an Urban Slum

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Abstract: The paper submits ethnography of ICT immersions in ‘information poor contexts’ through exploring socio-economic networks of a heterogeneous, low-income community in Mumbai. Here, ICT usages are embedded in two main social processes; 1) grass-root demand for communication 2) a mesh economy of formal and informal networks. We present findings from a contextual study of ICT enabled businesses in a rapidly up-scaling suburban slum amongst its low-income communities. We believe ICTs embedded in resource-stressed survival economies evolve and adapt to fit with existing economic behavior enmeshed in a range of formal and non-formal practices. We observed that here the formal/non-formal dichotomy is transcended, rendering economic distinctions irrelevant at the ground level of business networking processes. We ask if ICT’s, firstly, by the kind of technology they are, have specific potential to aid dissolution of these formal/non-formal distinctions for survival economies. Secondly, by facilitating small businesses, do they come to bear a special status in promoting survival, sustenance and overall development of the small business community.

Keywords: Ethnography, ICT for development, Communication ecology, Non-formal economy, Small business, Urban slum, Mumbai

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1. INTRODUCTION

In the last decade greater affordability of ICTs has transformed communication networks at every economic level. It is widely published in research and action literature that ICTs form a major component in accelerating development with the mobile phone occupying primary status in aiding development goals. The paper is informed by ICT usages in small survival economies in an urban slum/low-income community. We focus on the mobile phone and PC for an ICT-centered understanding of small businesses, what ICT usages facilitate and their role in sustaining important survival networks.

We report from an ongoing ethnographic study since February 2008 of a suburban low-income neighborhood in Mumbai focusing on usages of the mobile phone and the PC in small and diverse business outfits. Our broad research goal is to delineate social networks in the context of business practices among self-owned, small shops that use mobile phones and/or PCs.

We discovered two trajectories guiding business survival; Firstly, social networking revolved around tapping local demand for communication, secondly, social networks for business meshed with existing economic networks comprising of formal and non-formal practices. These revealed ICT usages for small business dealings in a survival economy, enmeshing and dissolving the formal/non-formal distinctions of economic landscapes. At one end of the economic divide are the small vendors and service providers of ICTs and at the other end are licensed corporates and private players, each sustaining and requiring the other to complete an economic transaction. We call this the mesh-economy, a term we coin to support research-based arguments. Based on these findings we argue that ICTs, viewed as 'privileged' technology, aid in the dissolution of formal/non-formal economic frontiers and provide scaffolding survival strategies for small businesses. We provide description and analysis of the nature of small ICT-related business foregrounding socio-economic contexts, networks and support structures of sales and services.

2. METHODOLOGY

Our research field, since February 2008, is three sq Kms of human habitat in west suburban Mumbai called Behram Baug with 10,000 households and a population of 50,000. Behram Baug is inhabited by a heterogeneous population comprising of upper middle to low-income classes and a slum quarter. The latter, our ethnographic focus and study, comprises a multitude of survival economies in the form of small shops, cottage industries, servicing stores and a self-employed human labour force offering diverse economic services. We used a variety of qualitative methods comprising open-interviews, observations of community life and base-line surveys of business outfits. So far, we have completed four months of field observations recording broad delineations of history, demographics and political administration of the community and random selections of 20 mobile phone stores, eight shops that depend on PC/PCs for work and 10 profiles of self-employed persons (Table1). We undertook semi-structured and open-ended interviews

with shop owners to allow us define ICT usages supporting everyday business dealings/networks. We profiled ten of the self-employed subjects from a convenience sample. Through open interviews we assembled data to note the variety of communicative resources and social networks supporting their livelihoods. We looked closely at social communication networks (both human and ICT-based), their embedding and contexts of use in the specifics of a heterogeneous community living at the urban fringe of development and progress. Given the on-going nature of research and for the purposes of this paper we use data specific to the 20 mobile stores to illumine arguments.

Table 1

Shop	#	Type of business	Method
*Mobile store	18	Tiny Top-ups, Pre-paid cards, handsets, accessories	Open interviews with store owners and field Observations in and around the store
Mobile store PC using	2	Bill payments, handset repair	
PC using store	6	e-ticketing, Photography, lottery	
Self-employed using mobile phones for livelihood	10	Domestic help, casual factory labour, taxi driver	

*The paper focuses on findings from the 20 mobile stores

3. LITERATURE REVIEW

We use and research three concepts to organize and analyse data from field research; 1. ICT for development 2. Communication ecology and 3. Non-formal economy, in the contexts of small business social networks. Research began from the viewpoint of ICTs for effective development and social progress needed to evolve a capacity to understand social contexts of communication in resource-challenged and ICT poor communities. ICT for development literature have highlighted the perils of assuming unilateral gain from deploying technology that cannot promote community participation (Heeks 1999, Cleaver 2001, Bailur 2007), empowerment in the face of ICT usages (Proenza 2001, Kaushik & Singh 2003, Colle 2005, Brewer et al 2006) and long-term sustainability of ICT community projects (Roman &Colle 2002, Gurstein 2005, Heeks 2007). One way to address these issues is through in-depth study and holistic analysis of community processes before or after a purported ICT intervention. Our study is a step in this direction by using the concept of communication ecology to foreground operative communicative networks in the field of study.

Borrowing from the area of communication research we use the term to refer to ‘the context in which communication processes occurs’ (Foth & Hearn 2007). These processes describe people communicating with others through extended social networks including face-to-face and a mix of media and communication technologies (Tacchi 2006). The concept enables researchers to take a holistic approach towards understanding an array of social contexts in which human communication occurs despite a research

focus on ICTs. While maintaining focus, it allows inclusion of multiple communication devices and extends inquiry into social contexts that govern the act of communication itself. Thus, communication ecologies are not simply technologies or communication acts but a range of human activities and clusters that facilitate them (Slater et al 2002, Tacchi et al 2003). Though ICTs are creating new formats of networking, the essential pre-ICT face-to-face communication behaviour continues to influence the variety of communication contexts especially in resource-poor human settlements (Malony 2006).

Explorations of the communication ecology among small businesses in Behram Baug point to a multitude of everyday networks at play. These businesses survived on regular daily interactions with several agencies. These shops, stores and servicing centres were embedded in the larger non-formal economy of not only the neighborhood but the sprawling metropolis of Mumbai. Researching them meant investigating a ‘mesh-economy’ of several legal/ill-legal, formal/non-formal businesses and related social networks. A broad definition of non-formal (or informal) economy includes household enterprises that are self-accounted with family or casual employees or the formal sector employing casual or intermittent labor all of which work under varying conditions of (un)regulation (Peattie, 1980, Agarwala 2005). A more recent definition of non-formal economy refers to a group of economic activities that have legal ends, but employ ill-legal means (Lugo & Simpson 2008) They are activities that do not intrinsically have a criminal content, but must be carried out illicitly, even though they are arguably legal and desirable activities. The existence of non-formal economy has been linked to the lack of property rights and the overall bureaucratic obstacles restricting individual entrepreneurial activity (Lugo&Simpson 2008). The term informal economy was coined by social anthropologist Keith Hart in 1971 during his field work in Western Africa (Hart 1973). It denotes survival economies of the poor whose individual economic transactions do not ever rise to the taxable limit and occupies a zone of commercial exchange, mainly by offering their labor. In countries like India, it makes for a range of goods and services affordable to the large number of low-income and poor populations. Mumbai offers a unique location to explore our research subject. It not only hosts an extraordinarily vibrant and organic commercial culture but a thriving non-formal economy intersecting with the more formal counterparts at various thresholds of contact. The informal sector, arguably, accounts for 68% of Mumbai’s commerce. We apply the three concepts to organize research findings and draw linkages between ICTs and small business.

4. FINDINGS

We take inspiration from Galperin and Bar (2006) who explore the role that could be played by microtelcos—small-scale telecom operators that combine local entrepreneurship, innovative business models, and low-cost technologies to offer ICT services in rural areas. But our field, though poor, is urban and showed similar play of creative entrepreneurial skill and business organization. Behram Baug’s habitat is a mixed neighborhood of upper and lower middle-class and poor communities. Its epicenter is a bustling slum community comprising 10,000 households, hosting a service economy of small shops, cottage industries, street vendors, skilled and unskilled contract laborers and domestic helpers. Due to Mumbai’s skyrocketing land prices much of it is

being gentrified into up market apartments, offices and shopping centres. Today, the slum geography is gradually eroding and making way for up-market malls, offices, apartments that ironically boosts its service economy. We confined our research to the slum neighborhood where we are investigating small business and self-employed services. We choose data from 20 out of the 55-60 neighborhood mobile phone sales and servicing outfits to forward and highlight three major arguments-

1. All local stores, even the smallest, may have formal partnerships with big mobile phone companies but their local business processes are mired in non-formal agreements
2. A sound knowledge of local communication needs shape everyday business deals
3. There is reasonable expansion and diversification of business leading to ‘organic’ immersion of technology.

The last argument will be expanded in more detail in the section under discussion and conclusion.

a) The Business of Non-formality

We discuss the depth of non-formality in the business culture of Behram Baug by evaluating the presence of technology (hardware), skills, labour, organization and housekeeping in unregulated and informal practices (Table2). The table encapsulates ethnographic data providing specific examples of non-formality in business practices.

Table 2

Non-formal practice	Number of stores n=20 stores	Source/Channel
Sourcing Hardware	17- keep grey market goods	Traditional grey markets, dealer networks, local contacts
Staff Skill Training	20- employees learn from uncertified sources	on the job, friends PC, uncertified training centres in the city
Human Resource(labour)	20- sourced through kindred and social networks	Direct kin from native place, friends brother, neighborhood contact,
House-keeping	20- irregular/ invisible	Own-accounted, manual/paper book-keeping, No billing (bill on customer demand)

The five categories represent capital and critical infrastructural input and channels of sourcing needed to run any business with a technology component. In the mobile store, all of these were predominantly sourced through social networks, rarely through a certified formal channel (e.g banks, employment agencies, branded markets)

Most of the leading mobile phone product and service providers are represented in shops lining the two main commercial streets cutting across the slum, in the form of posters, banners, fliers, and even audio jingles/announcements. These sell new and second hand phones, SIM cards, top-ups, scratch cards, phone accessories, repair and maintenance services and software updates. There are five dedicated mobile stores (almost resembling Nokia priority stores) selling a variety of phones which are available at 'white rates' complete with bills and warranty cards, to smaller 'made-in-China' phones that have 'less-than-a-year life' and no warranty¹. There are nearly 50 odd stores that sell a range of small 'talk-time top-ups', some as small as 25 cents, that house a small collection of handsets, largely acquired from the 'grey', unregulated, markets of Mumbai. A shopkeeper said, "*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*". All that a small shop needs is a space, eight by eight feet and a mobile phone to contact the local sales and distribution staff of various mobile phone companies. Recharge coupons, SIM cards etc are available on credit. The store keeper earns a percentage that varies from 8-10 % of the amount sold – the rates vary depending on the types of talk time and/ or connection sold and the arrangement between local vendors and company agents. This was negotiable despite standard procedures the companies adopt. On an average, a small top-up selling store can make a take-home profit of US \$ 200 per month.

Around 16 of small stores had attached mobile phone services to existing business, only four dedicating business to mobile phone slats and services. Four offered public telephony though a land line and call-booths, six offered photocopying services, one handled railway ticket bookings, one was a bakery, one had rented space from a small restaurant to run watch repair and maintenance services, two sold stationary, one was a travel agent, one a photo studio, the smallest one attached a maintenance service for household items like stoves/grinders and two had small stores selling general-purpose items. Many of these ran several businesses under one license and authorization for mobile service dealership, in many cases, were unclear. There were several anomalies in book keeping, billing and accounts. We observed that many client transactions go unbilled. Even shop-floors/spaces are tucked away in nooks and cervices of existing business outfit. Homes double up as storage spaces and office space. The public streets are spaces for client exchanges and services. The watch-repairer and mobile service provider sits in a front corner of a fast-food restaurant. His contract with the restaurateur is an undercover agreement of sharing income! The ring of the more privileged building spaces and residential complexes is serviced by the slum economy in areas such as domestic and household services, couriers, office services outsourced to smaller vendors (Xeroxes, photo studio etc.) and mobile phone services (top-ups, SIM cards and even second-hand sets),

¹ A basic hand set can be procured for US\$10 while as second- hand Nokia colour handset can be bought for as less as US \$25, four times less than the market price.

With regard to the relationship between the big companies and small shop owner, the former's sales and distribution agents visit these stores every day. A store keeper never has to call his suppliers. Once the site of the store is communicated to these agents, the store keeper has to incur zero costs other than rent, and a mobile phone handset! He is provided with promotional material about the various schemes. He is also sent SMSs about the various new schemes as and when they are launched – these are then backed with sales and distribution visits. He is also provided demo cards to make electronic transfers and given additional incentives of rock-bottom rates for his personal use. A store keeper says, “...*this is perhaps the best business given the minimal investment and effort it demands.... there can be no competition between the 50 odd shops here because the margins are very narrow and in a sense nobody steps on another and everyone gets a piece of the pie... ”.*

Most of the store employees are sourced from the owners native kin groups, usually sourced from the native place (the place where the owner originally hailed). In this way a small community of kindred begins to take root in the neighborhood. Shops using demo cards, electronic re-charges and software updates use a PC and needed a PC skilled employee for operations. Many a time, existing employees are encouraged to learn work-related PC-skills from a network of friends who have prior experience of handling computers or run a PC-based business (like digital photo studios, PC assembling units, small computer skill training institutes). Many local lads tutor themselves on the job with the help of agents representing the telephone company. In some cases, shop owners themselves undertook PC-training or dipped into the neighborhood pool of PC skilled youth and appointed them as employees.

None of the stores had a visible process of house-keeping sales and accounts. We observed precious few of the clients asking for or receiving a bill. Money transactions with mobile phone companies are standardized and visible but discounts and profit-cuts are wrenched out of regular procedures and are negotiable. These however accrue small but valuable profits to the local vendor.

b) Communication for location

A businessman servicing a mobile phone market in Behram Baugh is mindful of a working-class migrant population in need of a constant communication channel to call back home. Hence, free life-time in-coming, small re-charges and top-up coupons are killer packages bringing a steady inflow of income. The small business outfits, cottage industries and stores have a single dedicated mobile phone number that are used for both official and private reasons and move between employees. These are often lifetime validity connections, and may be tied up with offers like free talk time with the head-of-the-unit or a senior employee's number. Smaller wage earners share mobile phones among their groups of co-residents. The biggest draw is the cheap handset and connection

costs². All members of the unit contribute to recharging the single handset, or each other's talk time in case of multiples handsets. Phone expenses and charges were pooled and the amount a person contributed was proportional to their financial ability. Most prefer unbilled and pre-paid transactions for 4 reasons: 1. Billing criteria demand procedural transparency 2. Obtaining postpaid connections often require considerable paperwork 3. Client addresses are impermanent 4. Pre-paid connections constantly beeped about depleting talk-time and helped self-regulate mobile phone conversations and re-charge expenditure.

The mobile store develops or expects little client-loyalty. Socio-economic distinctions among customers matter little to store owners. The upper-income clients in the neighborhood visit the stores for their convenience and to avail of the range of cheap offers unavailable in their fancy counterparts, the malls and flagship stores. The slum section draws the greatest interest in new schemes of the small talk-time coupons, top-ups and low-end SIM cards. These yield the highest margins for the store. Store keepers claim little potential to develop a dedicated customer base. As one of them put it, *"It rains talk-time 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"*. There is still opportunity for a dedicated though infrequent customer base if one deals in used handsets and handset maintenance. If the store is known to provide good service and has a good network to rotate interesting handsets, few dedicated clients turn regulars. Word of mouth and goodwill is the only source of advertisement.

Finally the local demand for un-warranted goods at affordable rates makes for business viability. Here, un-warranted could mean not just 'used' handsets or the 'made-in china' variety but fake and stolen goods. The big stores keep away from these to maintain a legal face up-front. A stronger reason would be the lack of any good business-sense in storing 'grey' products. A fancy store mentioned, *"... it actually damages store image to keep these handsets and makes no business sense either – the margins are not worth the loss of respectable business."* Some of the big stores and all small stores were united in their approach to 'grey' market products. Another big store owner said *"...That 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"! They work for some 6 months – but then the prices are a dream..."* A small store keeper said that people actually call up and demand for particular handsets /specific models to be kept apart if he managed to get hold of them.

The third argument of linking expansion and diversification of business and the local

² A connection is got for as low as US\$ 3 with a month's validity. Top-ups are less than 3cents and can be topped up with talk time as and when one wants to make a call or SMS. A lifetime validity card can e had for as little as US\$12. Another popular strategy is to own two stated numbers from a single service provider with no calling charge. The fastest moving top ups are 10 rupee coupons. A 50 rupee customer is called a "good customer" and asks for easy recharge. Most of the small shops sold talk time with easy-recharge facility. Though demo cards allowing electronic talk time transfer was widely available clients preferred to buy top-up coupon and recharge manually!

nature of technology immersion will be detailed in the following section.

5. DISCUSSION

Information-centered research and understanding of ICTs in small enterprises view them as a viable route out of poverty through increased and more diversified income streams (Donner 2007, Duncombe 2006, Molla & Heeks 2007). Taking forward our argument of expansion and diversification of ICT enabled business and ‘organic’ immersion of technology, firstly, we began to think of a mixed or mesh economy as dissolving formal/non-formal economic distinctions at the ground level of business organization and transaction. (This point is strong in the ethnography). They function as continuous, inter-dependent and enmeshed spectrum; the small vendors and service providers at one end and the licensed big players at the other; each requiring the other to complete any business transaction. Small businesses do not fully possess the opportunity or resources to grow into a full-fledged organization with certification and legal papers (Moyi 2003). They depend on local/ neighborhood mesh economy and their communication channels, including face to face, neighborhood level conversations, as well as local and national conversations building relationships for ongoing economic transactions. Support structures for the economically-challenged end of the spectrum are local community structures and human and familial capital procured from the native home. As we noted in the findings section, much of the employee pool operating a store usually belongs to an ethnic group of migrants in search of livelihoods in Mumbai, usually hailing from the same native village or small town. As migrants, many of them lack resources and accessibility to large market networks for small-scale entrepreneurial activity. These drive them to associate with existing informal networks and, with time, evolve into small self-owned businesses. The mobile phone, in turn, provides the only communication channel to connect to the place of origin for extended support and renewing social contact.

The mesh-economy relies on street level activities and daily transactions among individuals with shifting impermanent addresses, who still are reliable clients and business partners. The mobile phone services are the backbone of mesh economies and explain its huge adoption rates. It allows for the individual / shared user with no fixed or permanent geographic identity to have one capable of translating communication into transactions. The mobile phone is a clear connector of spaces and creator of social networks across socio-geographic boundaries. Armed with a mobile phone, small scale entrepreneurship and street level economic activities begin to acquire the status to merge with mainstream commerce and transform existing capacities to transact.

We wish to reiterate that technology does not relinquish and replace existing channels of communication and social networking. On the contrary, through en-meshing with existing channels, it equips and energizes these towards broader and deeper business coordinates. ICT usages through their dissociation from a purely spatial and stationary communication channels liberate the marginalized and uprooted trader, especially in a magnetic megapolis like Mumbai, to transact and migrate towards more stability in

business relations.

6. Conclusion:

Our research investigation is still in progress requiring deeper data-synthesis and analytical frameworks to re-work initial findings into compelling arguments. We are nevertheless confident to argue that ICTs, by the very nature of the technology it is, has inbuilt facility for dissolving the formal non formal dichotomies. However, does the fact of its special technological relationship with legitimacy, piracy and non-formal economies facilitate inter-dependence? We feel that it can, if ICTs in general and mobile phones in particular, overlay existing networks of the mesh economy by promoting the use of shared computers, organizing camps, encouraging legally sharable software at neighborhood level neighborhood or group level. Using the mesh economy framework we find potential networks of relationships built productively on both sides of the spectrum; probably the only time when the formal multi-national service provider and the local kiosk top-up/talk time seller are visibly engaged in a semi-formal relation to sell mobile phones and services. The privileged side can further help legitimize the unprivileged side by subsidizing costs of space, becoming pro-active with local government authorities, providing legitimate identities to local vendors, fostering more accountable networks in addition to whatever the existing relationships accomplish. This certainly allows for mutual benefit, greater brand penetration at a neighborhood level and subsidizing costs promoting marketing activities for local enterprises.

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