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The Rise of ICT for Commerce in Small Product Offerings Case studies from India

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Abstract

The paper makes a case for information and communication technologies (ICT) in small businesses against the broader backdrop of the developing economy of India. ICTs come to India through two routes; the global employment route of IT information companies or the development route of donor-driven services to bridge internal digital divide. Local and context specific ICT based services in small businesses are organic, market-driven and self-sustaining bringing affordable services to hitherto 'underserved' and 'information poor' contexts. It seems pertinent to ask if ICT as service offerings in small business can sustain and evolve a participatory eco-system resulting in expansion of benefits to the player/entrepreneur and customer/user of technology. From a case-study in urban India we observe that most ICT-based or ICT-empowered businesses, services and products are shaped by two factors 1. The nature of key players driving business 2. Local and evolving customer relevance of the product. The two can combine to produce a third- opportunities that can turn businesses round to a more aggressive consumer oriented service offerings to sustain business and increase ICT infusion into local markets.

Keywords

ICT, Urban India, Small business, Ethnography, ICT for development, PC-based services

INTRODUCTION

Deploying information and communication technologies (ICTs) in India has taken two distinct paths. One, in the form of state-of-the-art IT parks that manage out-sourced back-end processing and technical support centres employing IT-skilled and English-language-trained labour. The second, through various pro-active agencies to bridge the 'digital divide' like governments, international donor agencies, NGOs, business corporations and academia. As a result we see a range of ICTs in globally driven hyper-urban landscapes to donor driven rural development projects. In between lay the variety of small street businesses bringing local, affordable and immersive ICTs. Our contextual study of ICT empowered small businesses makes a case for their substantive contribution towards ICT immersion through entrepreneurial efforts despite exclusion from global corporate initiatives and local governmental and non-governmental organisational facilities. These take support from an overlapping, interdependent and entrepreneurially driven economic processes operating through informal networks and practices, often times in specific spatio-cultural neighbourhoods. Despite acute material and infrastructural insufficiencies, there is consistent entrepreneurial agility to ferret and expand service-driven demand and metamorphose into profitable businesses. Small shops and businesses, some belonging to the strata of survival economy and some making small profits, adopt a range of work practices in specific to the nature and scale of everyday business. In some cases they achieve considerable economic gain through diversification by seeking and servicing local demand. Expansion of ICT usages depend significantly on these small businesses as they ferret and reach markets that are ignored by and probably invisible to organized sectors of economy.

Our main contentions are ICT-empowered businesses, services and products are shaped by two factors 1. The nature of key players driving business 2. Local and evolving customer relevance of the product. The two combine to produce a third-opportunity that can turn businesses round to a more aggressive consumer oriented service offerings to sustain and entrench a local market. We support arguments drawn from qualitative research with a twin focus on 1. PC enabled businesses 2. Nature of organisational entrepreneurial activity in these businesses. We adopt an ethnographic approach drawing data from 16 PC based small businesses in the city of Bangalore.

LITERATURE REVIEW

We present a short review of extant literature on ICT adoption amongst small and medium business (SMEs) to identify their fit to our case-study in India. We brought together three themes to identify relevant research literature to frame data. The first theme speaks of challenges and gaps in successfully adopting computer technology and information systems in SMEs using case studies from diverse contexts. We found two concerns predominating research literature on SMEs and ICT adoption case studies across countries 1. Factors shaping adoption of information technologies in SME business practices and 2. The strengths of e-commerce driven processes in SMEs. They mention web site comprehensiveness (Chan & Lin 2007), knowledge management (Hsu et al 2007), use of internet (Jaw & Chen 2006, Guo & Xu 2006, Tan & Ouyang 2004) introduction of enterprise resource planning (ERP) systems (Newman & Zao 2007) and e-commerce mechanisms and developing organizational capability to compete in export and global markets (Zang et al 2007, Hinson & Abor 2005, Moodley 2003, Loane et al 2007, Mathews & Healy 2007). However, our research focus moves away from adoptions of higher information systems in organizational practices and e-commerce processes to a closer look at small street-level business and their ICT adoption strategies to an evolving local demand.

The second theme looks at ICT adoption to address the digital divide and place disadvantaged economies in a position where using information and communication technology for development might not be an immediate reality (Molla & Heeks 2007, Galperin & Bar 2007). It mentions an absence of research in evaluating internal, external and contextual imperatives in impacting e-readiness in these countries (Molla & Licker 2005, Heeks 2008).

The third theme borrows from the previous two to frame ICT adoption studies of India. Although PC and internet adoption show a persistent growth, they are not the preferred medium of communication, especially in small business networks, the focus of this paper. Despite its rapidly expanding global IT capacity much of India remains on the weaker side of the digital divide experiencing ICT resource and infrastructural gaps. Bhagwat and Sharma (2006, 2007) in their extensive work on Indian SMEs mention the absence of proper information systems architectures to augment existing skills and lend competitive edge to enhance and expand business networks. Moreover, a bulk of small business in India belongs to the non-formal sector and is deeply intertwined in informal business practices (Agarwala). There is considerable extant literature around informal economy in global and Indian contexts (Peattie 1980, Kulshreshtha & Singh 1999, Moyi 2003, Lugo & Simpson 2008) and urban micro-entrepreneurs in India and their information and communication behaviours (Donner 2007). These refer to the non-formal economic sector to denote surviving, small and medium businesses whose economic transactions occupy a zone of commercial exchange offering labour-driven services. These enter into informal relationships with partners and employees to optimize business opportunities. However, there is relatively less focus on small PC enabled businesses, especially those working off-the-streets, enmeshed in daily business practices of the non-formal economy. As a consequence, we have scanty published research to begin with general formulations about the nature of small enterprises and ICTs. Our ethnography is a step towards filling research gaps around ICT-enabled small businesses and their role in ICT infusion in developing economies.

RESEARCH METHOD

The urban studies were conducted in the heart of a commercial district in the city of Bangalore from August-December 2007. We did a study of 16 businesses, a variety of firms that used a PC/PCs for everyday business-functions, by conducting open-ended interviews with 16 managers/owners, 16 employees, and observations inside their shop premises. We dwelt on questioning business strategies of managing financial stability, enterprise expansion, and customer demand for services. We probed a plethora of efforts to fulfil customer demand with affordable management of human and technology resources. Through qualitative interviews and field observations we provide everyday instances of running businesses, ways of adapting to local supply and demand, procuring suitable work-force and inventing organizational strategies to create survival niches. We conducted 2 to 3 interview sessions with each of the 16 owners and 16 employees. These interviews recorded base-line data about highly valued services, special efforts to sustain and go beyond them by ferreting demand and matching appropriate service offerings. Each session also included observations and recording of business activity in kiosk premises. Transcripts from interviews and field notes informed and organised research findings. The social context of Bangalore was specifically chosen for its position as the Silicon Valley of India hosting state of the art global IT parks and bearing high visibility as the country's face of the IT revolution. It comes as no surprise that the city houses an energetic ICT market in the form of small enterprises expanding in the shadow of giant IT companies.

RESEARCH FINDINGS: ICT INFUSION INTO URBAN SMALL BUSINESS

PC enabled small enterprises are those that depend on a PC either for internal organisational procedures like billing, book keeping or point of sale applications or client-facing shops like photo studios, photo-copiers, printers, cyber cafés, tutoring institutes, money transfer outfits and even PC assemblers. Enterprises that use PC for higher organizational processes (like ERP) are generally bigger in scale, income and profit generation and excluded from our study. We describe a study of 16 businesses in the heart of a commercial district in Bangalore, India. This locale is filled with numerous ICT enabled businesses and services, ranging from informal micro enterprises to multi-city franchise chains. We focused on a variety of small shops and offices that employed one or more PCs (Table 1 & 2) and found two broad types of business 1) Franchised small businesses with multiple branches 2) Small shops that offered computer-based services. In the first case, all PCs were used for accounting and back-operations and some for billing and point of sale operations maintaining a measure of organisational standard. In the second, number of PCs is fewer, their role limited to servicing clients alone. Commonly, these businesses are family-owned and operated and considerably less formal. We will explain the characteristics and service offerings of both types of businesses emphasising their strategies to localise, stabilise and expand market demand

Franchisee Businesses

We begin with 7 franchised outlets of larger business. The optician, retailers and pharmacist use a PC for maintaining accounts and inventory-management. Businesses like the pharmacist move high volumes of sales. Orders are taken manually by low-skilled (computer illiterate) employees during business hours. At the end of the day or a certain period, an accountant or PC-skilled employee computerise transactions or total sales for the period. The employers at the kitchenware store preferred the convenience of manual, handwritten receipts that are later computerized by the billing software. This eliminated the need for recruiting more computer savvy employees when a regular salesman could take charge of point of sale transactions. The retailer of beauty products, another franchised retail store, has two advanced point of sale for

Table 1. Franchised-Models

Nature of Business	# of PCs	employees using PC	Purpose
Optician	1	1	Billing, Accounts
Pharmacy	1	1	Accounts
Kitchenware Retail	1	1	Accounts
Cosmetics Retail	2	7	Billing, Accounts
Jeweller	1	1	Billing, Accounts
Fast Food	1	1	Accounts
Fast Food	1	1	Billing, Accounts

Table 2. Computer training institutes

Nature of Business	# PCs	# Users	Role of User
Comp. Inst.	20	6+	Tutors, Students
Comp. Inst.	4	1+	Tutors, Students
Comp. Inst.	6	2+	Tutors, Students

check-outs. Even when all 7 employees are trained to run specific tasks on the computer, very often you find that even during peak hours, only one of two PCs were manned, resulting in longer queues at the checkout. The manager attributes this to employee shifts, with multiple tasks, such as inventory stocking and tracking, to complete within a timeframe. Unless the manager directs an employee to billing, the employee will proceed with other tasks. This suggests that internal human resource management solutions improve efficiency more than a supply of additional PCs. Two of the franchisee stores, the fast food joint and jewellery retail store are owned by proprietors running a few other independent businesses and are absent from shop floors for considerable time. Though there is a certain degree of informal relations with customers (credits, bargains to name a few), the owners demands work accountability from employees for the time he is away. Here, PCs are used by an auditor few times a month for maintaining and unify accounting of several stores under a common ownership. Sometimes a high-skilled employee computerizes bookkeeping once a day. Other businesses of these proprietors had irregular accounting practices that were not recorded on any software.



Figure 1: A DTP outfit



Figure 2: Cyber café and multi-media centre

The more formal franchised stores were incumbent to produce transparent billing and accounting systems since they belonged to the organised business sector- multiple branches, organized labor and management practices. In the case of smaller businesses discussed shortly, the owner or a close associate runs the shop leading to informal billing practices. An example case is that of not providing receipts or giving informal receipts to the customer. These helped businesses to evade paying taxes on small profits. Given the size and informality of small businesses, computerisation of accounts meant transparency and unwarranted anxiety for the owners.

Computer Training Schools

The next three firms are privately-owned, computer-skills training institutes that offered low-cost tutoring services for applications such as MS Office, accounting software and programming languages. These institutes have no formal accreditation to any officially recognized programs, but offer alternative informal certifications of proficiency in computer skills. Their clients are high-school/graduate students seeking employment in a competitive job markets. These institutes supplement several colleges in the vicinity that are unable to service the mushrooming enrolment of students. The classes are time-slotted conveniently for the students also ensuring availability of tutors and computers. The largest in our sample is a franchisee with 7 branches across Bangalore. This branch had 20 computers and 6 instructors. Classes are taken in batches that were expanded to ensure there is almost always a 1:1 student to PC ratio. During crowded summer months, the institute serviced demand by recruiting advance-level students as part-time tutors or by adjusting batch timings. Smaller and poorer institutes with resource constraints show unfavourable student-tutor ratio. The management encouraged peer learning and collaboration to tide over tutor shortage. Classes were unstructured and students were motivated to avail of free slots for self-paced learning. Tutoring methods, student enrolment, even tutoring rates and profits were therefore market-driven and fluctuating.

Desktop Publishing Businesses

The last 6 businesses in our sample that provided PC-based services were Desktop Publishing (DTP) outfits (Table 3). All were in close proximity to each other, offering very competitive rates and quality to clients. Most DTP firms that we studied were primarily photocopy shops that evolved to offer additional services. Each of the above shops delivered services besides printing. The popular offerings were photocopying, scanning, typing and printing documents.

Table 3. PC-based services- DTP

Nature of Business	# PCs	# Users	Role of User	Purpose
Photocopy, DTP +	2	2	Operator	DTP, Net surfing
Photocopy, DTP +	3	4	Operator, Typist	DTP
Photocopy, DTP +	6	6-7	Sales, Design	DTP, Scanning, Digital Photo Art
Photocopy, DTP +	4	5	Operator, Typist	DTP, Scanning, Local Language Typing
Photocopy, Digital Art	1	1	Designer	Signboards etc.
Photocopy, DTP +	3	4	Operator	DTP

The more enterprising businesses had internet connection and offered PCs for net-surfing, local language typing, digital photo art for printing banners, posters and invitation cards. Some invested in hardware for CD/DVD writing, audio downloads and lamination to existing services. Smaller shops in our sample engaged mostly in photocopying or printing small documents. Bigger shops procured bulk printing orders from other business outfits or customers who wanted fancy calendars, touch-up photography and art work. Crowded months, rush hours and client queuing were tided by optimal distribution of resources. Shop-owners having two businesses in the vicinity direct customers to their 'shop across the street' and employees distributed work load between

existing PCs. We asked if more PCs would promote better service quality. Almost all of the owners pointed to adept manipulation of employee/PC ratio to meet deadlines. Customer relationships were developed to endure delays on occasion of heavy demand for services. Responding to anticipated demand in college neighbourhoods, DTP owners sell advance photocopies of reference papers and other documents required for preparatory examination study. A specific DTP shop was famous among college campuses for having previous term class notes photocopied ahead of the academic year for interested students!

Employee Skill set

These findings indicate that it is not so much the quantity or even quality of ICT but rather, the contextual allocation of business resources that succeed. Services depended largely on two factors. It required an enterprising entrepreneur who sense demand for multi-tasking PC for CD writing and internet surfing. The second required prudent use of skill-availability. For example, the retail franchisee chose manual billing over high-tech point of sale applications, as finding a computer illiterate salesperson with strong abilities in manual billing and accounting was cheaper and sufficient for his scale of business. A chance availability of an employee skilled in Adobe Photoshop expanded business to support digital art and posters. One owner said he encouraged his young PC savvy nephew to employ his computer expertise in exchange for work experience. Shops that offered a plethora of PC-based services hired qualified typists to use PCs for computerizing or transcribing documents. These typists are not involved in any other PC based activity as their owners do not trust them with higher PC functions. A DTP shop owner said "Some employees are not allowed to do anything with a PC but take a print out because if he does something wrong then it gets difficult to repair the computer". Trouble shooting was expensive. A factor to account for is the extent to which poor customer support of PC suppliers affect the desire and motivation of the owner to experiment with new offerings or practices.



Figure 3: PC-based multi-service store



Figure 4: The street business

DISCUSSION AND CONCLUSION

In India, plenty and scarcity co-exist side by side. A largely international market-driven approach or a state-driven developmental scheme have shown serious limitations in distributing advantages of information technologies to huge sections of the populace. Between the two approaches to ICT adoption, the vast gamut of small businesses exists in both formal and informal sectors of economy. These bring affordable, relevant and demand driven ICTs to populations experiencing little impact of the global ICT boom or the out-reach of development agencies (Rangaswamy 2007). These businesses are organic within their socio-economic context. They evolve locally, require small capital and a 'little more' than modest entrepreneurial skills. We explore two related issues on ICT business configurations in urban India: 1. Context specific, innovative and commercial localization of ICT services introduce and immerse technology in hitherto underserved contexts. Commercial spaces become important nodes for entrenching these technologies. 2. Key persons managing business are critical in turning everyday instances of survival and organizational strategies to more aggressive consumer-oriented, service offerings for a local market.

Many entities are involved in the set up of ICTs in any country – governments, academia, multilateral organizations, corporations and non-profits. All have stakes in the performance and impact of ICTs on a population having channelled substantial infrastructural investments (UNDP 2004; Madon, 2005; Kuriyan *et al.*, 2006; Jhunjhunwala 2000). India, by and large, has adopted two main paths to ICT immersion. The first path tied globalization of Indian economy to the ICT boom. This saw the onset of cutting edge IT campuses, high-tech support centres, back-end processing offices and enclaves of customer support. As corollary to the first, the second path witnessed government and non-government agencies rushing to bring favourable impacts of ICT to regions excluded from the boom. Soon, for-profits, corporates, academic research centres began to invest in ICT for these 'information poor' regions to find common cause for broader development concerns such as e-governance, education and health (Chakravarty & Sarikakis, 2006, Garai and Shadrach, 2006) At a broad level, it was felt that access to information, be it health, agriculture, education or government schemes, would at some

level lead individuals to act on that information and empower themselves (Heeks, 1999). But several studies have demonstrated that technology initiatives purely based on faith held by donors and little preparedness are difficult to sustain in the long run, let alone empower these regions (Ali and Bailur2007, Bailur 2007, Heeks 2005, Kurien et al 2007).

We use the term informal economy, for the purposes of this paper, to denote small businesses like street-shops, household enterprises to medium-sized retail businesses practicing non-formal organizational and accounting practices. The employee pool comprise of family, kin, neighborhood or friendship networks working under unregulated and unconditional employment situations (Agarwala 2005)¹. These micro, small and medium enterprises are the major source of income, jobs, manufacturing, and services in developing economies. The wide range of goods, services, trading and retail covered by these businesses is probably the only outlet for the millions in low-income brackets. Duncombe & Heeks (1999) go on to characterize these 'as firms that show a greater business focus and which deliver broader/longer term benefits of competitiveness, innovation and exports'.

In our sample of PC based non-formal businesses, all sustain by optimizing technology and human resource management with employees easily out-numbering PCs. Owners have to ensure customer satisfaction through quality services, and technology skills become important aids in raising client experience and expectation. Work practices include active juggling of customer interaction and computer interfacing, the former overriding the concerns of the latter during working hours.

- *Not all employees use PCs-* -There is always an employee to take care of face-to-face customer solicitation and important non-PC related tasks. Only designated employees were allowed to use the PCs as many had insufficient expertise and the fear of breakdowns and wasteful trouble shooting. Owners/managers drew an imaginary line to demarcate further diffusion of computing among employees than necessary. The smaller the group that managed PCs the better it served enterprise-organisation and expense.
- *Optimal and economic usages of PCs marked by function-* PCs in the front-desk were designated for taking orders and back-office PCs are used for service-related work like digital art, CD writing, scanning, editing photographs. Employees were also defined by work-related computing skills and managed accordingly. The software loaded on to them was also function-specific. For example, PCs may not necessarily have internet access if that was not critical to business operations.
- *Customers were king* - "We are satisfied with two PCs", says one of our subjects, running a photocopying business "We have a reputation for good quality and customers will *wait* for our service". There is consistent response that the present level of ICT resources is sufficient to handle work load.
- *Cost of a PC includes the cost of an additional employee-* Owners are wary that adding new technology includes the cost of an employee who needs to acquire the specific skill or that of hiring a person with the skill. Most PCs in these businesses are from resellers with unreliable technical support abilities. Reliability and credibility of an employee are critical enough for owners to vet them carefully during the hiring process and before entrusting a PC.
- *Servicing a client needed a congenial mix of technology and employee.* Technology ensured quality and speed while employee ensured the human interface in a transaction. Though this may be true of bigger enterprises, the paucity of money, technology and scale of business make the juggling of resources acute while maintaining diffusion of technology into business. Nevertheless, an ever-vigilant and dynamic entrepreneur expertly advanced tech-adoption, scale, diversity and quality of enterprise.

Growth trajectories of profit making ICT empowered small businesses are geared to optimizing local market requirements and labour conditions. Furthermore, they are dependent on the broader culture of informal business practices to organise and hire specific personnel and synchronize opportunities afforded by computing technology and the market. A typical growth trajectory of an urban ICT-empowered small business, like a photocopying outfit, would firstly be to establish reputation among its clientele, add computer-aided printing, move on to internet based services such as mp3 downloads, internet surfing and service a locality-specific demand. In some cases, the breath expanded beyond immediate locality.

¹ For a profile of labour, conceptual issues about definition and working of the non-formal sector in India, see Mazumdar(1976)

It is clear that balancing costs of technology maintenance, skilled personnel and servicing and expanding customer base is imperative to these businesses. Shops desirous of technology upgrade are alert to changes maximizing opportunities proportional to market demands and conditions. Yet, technology is skilfully introduced and applied to meet market and labour conditions profitably. Thus, two outcomes stand out from ethnographic data about ICT-based small product offerings; One, that evolving localized adoption push business growth and expansion; Second, entrepreneurial drive advances product range and business sustainability.

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