

This report is presented as received by IDRC from project recipient(s). It has not been subjected to peer review or other review processes.

This work is used with the permission of P. Vigneswara Ilavarasan, Mark R. Levy.

© 2010, P. Vigneswara Ilavarasan, Mark R. Levy.

ICTs and Urban Microenterprises: Identifying and Maximizing Opportunities for Economic Development

Final Report

July, 2010

P. Vigneswara Ilavarasan and Mark R. Levy



This publication reports on a research project financed by
Canada's International Development Research Centre (www.idrc.ca).



Canada

ABOUT THE AUTHORS

P. Vigneswara Ilavarasan (PhD – IIT Kanpur) is an assistant professor in the Department of Humanities and Social Sciences, IIT-Delhi. Dr. Ilavarasan is recipient of the Outstanding Young Faculty Fellowship Award (IITD) and the Prof. M. N. Srinivas Memorial Prize. He has served as a consultant to the Ministry of Labour and Employment (India), the World Bank, and Oxford Analytica, and has received research grants from IDRC Canada and the Ministry of Science and Technology (India). Dr. Ilavarasan's research interests include technology and society, with a special focus on the information and communications technologies and India. Further details are at: <http://web.iitd.ac.in/~vignesh/>.

Mark R. Levy (PhD – Columbia University) is a professor in the Department of Telecommunication, Information Studies & Media at Michigan State University. Dr. Levy is the author or co-author of numerous scientific articles and ten books, including *The VCR Age*; *Global Newsrooms, Local Audiences*; *Mass Communication Review Yearbooks 5 and 6*; and the award-winning *Communication in the Age of Virtual Reality*. Dr. Levy has been editor of the *Journal of Communication* and an associate editor of *Human Communication Research* and *Critical Studies in Mass Communication*. His research examines the audience for mass communications and the users of new communication technologies.

Acknowledgements

We wish to thank the International Development Research Centre, Ottawa, Canada for its financial support of this project. We are especially grateful to our program officer, Ms. Chaitali Sinha, whose extraordinary sense of what makes for outstanding ICT4D research was a constant source of inspiration and challenge.

Several research assistants at IIT-Delhi deserve praise for their dedication to our project: Dr. Pradip Swarnkar, Dr. Jyoti, Mr. Ajay Kumar Gupta, Mr. Abhigyan Mitra, Ms. Shelly Tara, Mr. Malish, C.M, and Dr. Shalini Duggal. Han Ei Chew, Michigan State University doctoral candidate and gifted data-miner, found significant “stories” in our voluminous data set and crunched the numbers to back them up.

In the course of our research work, we immensely benefited from the reviews and suggestions of Dr. Jonathan Donner, Dr. Jack Qiu, Ms. Anita Gurumurthy, Dr. Nimmi Rangaswamy and Dr. Mathew Levy.

Mr. O. M. Prabakaran, Director of the National Survey Sample Organization office in Mumbai, and Mr. N. S. Deoghare, Statistical Investigator Gr-I, made it possible to carry out our innovative and rigorous sampling design. Our field assistant in Mumbai, Mrs. Pratyusha Rath, met project needs with independence and efficiency. Mr. Nagsen Khade, Ms. Priya Jain, and Mr. Vikas Kumar of GNN Market Research Pvt. Ltd helped us in the data collection in Mumbai.

At IIT-Delhi thanks goes to Prof. Rukmini Bhaiya Nair and Prof. Amrit Srinivasan of Dept. of Humanities and Social Sciences, Prof. Sunil Tuli, Prof. S. N. Singh, Mr. R.K. Gupta and Mr. K. Bhattacharya of Industrial Research and Development for their tireless support in administering the grant.

We would like to acknowledge the specialized help extended to us by Dr. Diane Levy, who styled our complicated data collection tools and manuscripts. Dr. Shikha Suman shared her knowledge of fieldwork management and data cleaning. Would that all researchers had such talented and supportive spouses.

New Delhi

East Lansing, Michigan

July, 2010

Acronyms and Concepts

- 3G** The third generation of mobile telephony standards, designed to provide larger and faster bandwidth and more diverse applications.
- Business formality** The degree to which a business, especially a microenterprise, is licensed, regulated, or otherwise monitored by tax authorities and other government agencies. Formality may also be reflected in the degree to which a microenterprise follows more or less advanced record-keeping and money management practices. See *business informality*.
- Business growth** An increase in business income, profits, or number of paid employees in some period of time.
- Business informality** The degree to which a business, especially a microenterprise, is unlicensed, unregulated, or otherwise “invisible” to tax authorities and other government agencies. See *Business formality*.
- Business purposes** Those actions, which are motivated by a perceived need to establish or maintain a business or to increase business income.
- Declining enterprise** A microenterprise with decreasing year-over-year income. See *Growing enterprise* and *Unchanging enterprise*.
- Establishments** Enterprises with at least one hired worker, almost always located in a fixed, non-household location. A definition of the NSSO. See also *OAE*.
- Growing enterprise** A microenterprise with increasing year-over-year income. See *Declining enterprise* and *Unchanging enterprise*.
- ICTs** Information and communication technologies. Hardware, software, and resources used to generate, transmit, or store communication messages. ICTs include the mass media (radio, television, film) and digital technologies such as computers, the Internet, and telephones.
- IITD** Indian Institute of Technology Delhi.
- IV Unit** Investigative unit. A census unit consisting of many NSSO urban frame survey blocks. Each block consists of 120–160 households. See *NSSO*, *UFS*.
- M** Arithmetic mean. See *SD*.
- Microbusiness** Synonym for microenterprise (see *Microenterprise*).
- Microenterprise** A very small business, often part of the informal sector of the economy, having at least one and up to twenty hired workers, housed in a permanent business location.
- Microentrepreneur** The owner or manager of a microenterprise or microbusiness.
- NSSO** National Sample Survey Organization. An agency of the Indian government responsible for national surveys on various socio-economic issues.
- OAE** Own Account Enterprises. Sole-proprietorships, most often home-based, without any hired workers. A definition of the NSSO.

- PC* Personal computer.
- PCO* Public calling office. A pay-for-use telephone facility in a public location, sometimes landline-based, sometimes using wireless technology.
- SD* Standard deviation, a measure of variability or dispersion. See *M*.
- STD booth* Standard trunk dialing booth. A public facility for making long-distance phone calls.
- UFS* The Urban Frame Survey consists of mutually exclusive and identifiable urban blocks with well-defined boundaries with a population of 600–800 and /or 120–180 in each block. A number of blocks will form an IV unit. See *IV unit* and *NSSO*.
- Unchanging microenterprise* A microenterprise with neither increasing nor decreasing year-over-year income See *Growing enterprise* and *Declining enterprise*.

Contents

EXECUTIVE SUMMARY	1
CHAPTER 1: INTRODUCTION.....	2
Microenterprises and Development.....	2
The Special Case of the Urban Microenterprise.....	4
Mobile phones, PCs, and Internet Cafés	5
<i>PCs and Broadband</i>	7
CHAPTER 2: RESEARCH METHODS	10
Methodological Highlights	10
Sample Design	12
Questionnaire Construction	16
Description of respondents	19
CHAPTER 3: ICT USES AND CONTEXTS	23
Key Findings.....	23
ICT Use by Urban Microentrepreneurs.....	23
<i>Mobile phones</i>	23
<i>Landline Telephones</i>	24
<i>PCs and Laptops</i>	26
<i>The Value Chain Application of ICTs</i>	28
<i>Value Chain Core</i>	30
<i>Value Chain Boundaries</i>	31
<i>Value Chain Support</i>	32
<i>Networking Support Activities</i>	33
Conclusions	35
CHAPTER 4: ICTS AND ECONOMIC GROWTH.....	39
Key Findings.....	39
Growing, Unchanging, or declining microenterprises	39
Income change and employment generation	41
Microenterprises characteristics and growth	43
<i>The consequences of Microenterprise Formality</i>	45
ICT ownership and use	47
<i>The Impact of Mobile Usage</i>	48
<i>Computers and Microenterprise Growth</i>	49
<i>Results from the exploratory sample</i>	50
Microentrepreneurs' characteristics and income growth.....	51
Summary	53
CHAPTER 5: WHEN ICTS MATTER	56
Key Findings.....	56
Testing the model of microenterprise growth.....	58
<i>The Gender Context</i>	62
Business Growth, Gender, and Length of ICT ownership.....	63
Conclusions	66
REFERENCES	69
APPENDIX A: INSTRUCTIONS TO FIELD INTERVIEWERS	77
APPENDIX B: SUPPLEMENTARY TABLES.....	81
APPENDIX C: SURVEY INSTRUMENTS	87

List of Tables

TABLE 1: DISCUSSION GUIDE FOR THE PILOT STUDY INTERVIEWS	16
TABLE 2: RESPONDENT CHARACTERISTICS	19
TABLE 3: MICROENTERPRISES CHARACTERISTICS.....	21
TABLE 4: USE OF WORKPLACE COMPUTER FOR CORE ACTIVITIES	30
TABLE 5: PERCEPTIONS OF MOBILE PHONE USE IN NETWORKING SUPPORT ACTIVITIES.....	34
TABLE 6. COMPOSITION OF MICROENTERPRISES BASED ON INCOME CHANGE	40
TABLE 7: CROSS TABULATION OF HIRED WORKERS AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES	42
TABLE 8: CROSS TABULATION OF NATURE OF BUSINESS AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED BY WOMEN	44
TABLE 9: CROSS-TABULATION OF REGISTRATION WITH GOVERNMENT AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES	46
TABLE 10: SIGNIFICANT LINKAGES: INCOME CHANGE, ICT OWNERSHIP AND USAGE, CHARACTERISTICS OF MICROENTREPRENEURS AND MICROENTERPRISES	54
TABLE 11: PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN BUSINESS GROWTH AND SELECTED VARIABLES	59
TABLE 12: REGRESSION COEFFICIENTS OF FORMALITY, MOTIVATION, PERCEIVED SOCIAL STATUS, TOTAL ICT ACCESS, AND INDUSTRIAL DOMAIN ON BUSINESS GROWTH.....	61
TABLE 13: GENDER-SPECIFIC CHARACTERISTICS OF WOMEN ENTREPRENEURS.....	63
TABLE 14: LENGTH OF ICT OWNERSHIP	64
TABLE 15: REGRESSION COEFFICIENTS OF BUSINESS GROWTH AS THE DEPENDENT VARIABLE AND SELECTED INDEPENDENT VARIABLES	66
TABLE B.1: INDEXES AND RELIABILITIES.....	81
TABLE B.2: CHOW TEST OF BUSINESS GROWTH BY ECONOMIC SECTOR	82
TABLE B.3: ANALYSIS OF VARIANCE FOR LENGTH OF OWNERSHIP OF ICTS	83
TABLE B.4: CROSS-TABULATION OF CHANGE IN BUSINESS AFTER TERROR ATTACKS AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES	83
TABLE B.5: CROSS-TABULATION OF CUSTOMERS FROM OTHER PARTS OF MUMBAI AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED BY WOMEN	84
TABLE B.6: CROSS-TABULATION OF CUSTOMERS FROM OUTSIDE MUMBAI AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED/MANAGED BY MEN	84
TABLE B.7: CROSS-TABULATION OF MOBILE OWNERSHIP AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED/MANAGED BY MEN	84
TABLE B.8: CROSS-TABULATION OF MOBILE OWNERSHIP AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED BY WOMEN	85
TABLE B.9: CROSS-TABULATION OF ENGLISH WRITING ABILITY AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED/MANAGED BY MEN	85
TABLE B.10: CROSS-TABULATION OF MARATHI LANGUAGE ABILITIES AND INCOME CHANGE CATEGORIES FOR MICROENTERPRISES OWNED BY WOMEN	85

List of Figures

FIGURE 1: TYPICAL WARD MAP OF MUMBAI	12
FIGURE 2: EXAMPLE OF IV MAP FROM MUMBAI	13
FIGURE 3: PHASES OF FIELDWORK	15
FIGURE 4: MICROENTERPRISE AGE AND ACCESS TO WORKPLACE LANDLINES	25
FIGURE 5: VALUE CHAIN ROLES OF ICTS IN MICROENTERPRISES (ADAPTED FROM DUNCOMBE AND HEEKS, 2005)	29
FIGURE 6: COMMON USES OF MOBILE PHONES.....	36
FIGURE 7: COMMON USES OF WORKPLACE COMPUTERS	37
FIGURE 8: MODEL OF MICROENTERPRISE GROWTH.....	57
FIGURE 9: REVISED MODEL OF MICROENTERPRISE GROWTH	61

Executive Summary

The research reported here was guided by three questions: (1) What are the current and potential patterns of mobile phone, landline, PC, and Internet café use among urban microentrepreneurs? (2) Are mobile phones, PCs, and Internet cafés related to the stability or growth of urban microenterprises? (3) Can we identify those urban microentrepreneurs and/or microenterprises for which ICT use is associated with economic growth?

We conducted in-depth interviews in Mumbai City, India, with 329 male owners or managers of microenterprises and 231 female owners of microenterprises from April through June 2009. In addition, data from a convenience sample of 102 men and women was carried out in September and November 2009. We defined microenterprises as businesses that had more than one but fewer than twenty hired workers. We found that:

- Nearly everyone who owned or managed a microenterprise—regardless of sex—had a mobile phone.
- Many female and male microentrepreneurs who owned or managed microenterprises and who used a mobile for business communication reported that the year-over-year income of their business had risen.
- Urban microentrepreneurs experience different levels of economic growth depending on how they use their mobiles for business communication.
- The positive impact of mobile phones on microenterprises might emerge only after two years of use. Microentrepreneurs who owned a mobile for two years or less saw some growth in business income; those who had begun to use their mobile *more* than two years earlier experienced even greater income growth.
- Levels of PC ownership and usage at home and work were low.
- Few microentrepreneurs frequented Internet cafés for business purposes.
- Only small numbers used their mobiles for the full range of business-enhancing activities.
- Consideration of a microentrepreneur's full repertoire of ICT use showed a positive relationship with microenterprise growth, especially when other factors such as gender and motivation were also taken into account.
- Compared to women-owned microenterprises, microenterprises owned or managed by men had much greater increases in business income, although female owned microenterprises also experience some growth
- The more positive a female microentrepreneur felt about her status and power because of her business, the more she was motivated to use ICTs in support of her business.
- The more that a woman entrepreneur used mobile phones, workplace computers, etc., the more her microenterprise grew, especially businesses in the trade sector of the informal economy.

Chapter 1: Introduction

The role of information and communication technologies (ICTs) as a facilitator of development in the world's poorest nations has become a well-established maxim of scholarly and public discourse. International organizations (e.g., International Telecommunication Union, 2009; United Nations, 2009; World Bank, 2009), governments (e.g., Republic of Rwanda, 2004; Government of India, 2004; Jamaica Ministry of Industry, Technology, Energy and Commerce, 2007), and even the news media (Agence France-Press, 2009; The Economist, 2009; The New York Times, 2009) now take it as an article of faith that ICTs, especially mobile phones, can be significant enablers of positive change in the developing world. However, robust evidence in support of that upbeat perspective still remains in short supply (Donner, 2008) and this shortcoming is particularly evident in the space of social and economic outcomes among urban microenterprises.

Broadly, the research reported here investigated the following questions:

- What are the current and potential patterns of mobile phone, PC, and Internet café use among urban microentrepreneurs?
- Are mobile phones, PCs, and Internet cafés related to the stability or growth of urban microenterprises?
- Can we identify those urban microenterprises that are most likely to benefit from ICT use?

MICROENTERPRISES AND DEVELOPMENT

Microenterprises are the major source of income, jobs, manufacturing, and services in developing economies (Mead & Liedholm, 1998; Nichter & Goldmark, 2005). Microentrepreneurs make a wide range of goods in small workshops; engage in trading and retail activities; and provide services ranging from motorcycle repair to catering. In many developing countries, substantial proportions of rural microenterprises are run by women (e.g., Eversole, 2004; Gurumurthy, 2006; Thas, Ramilo, & Cinco, 2007). Because of their ubiquity, flexibility, and obvious potential as a path toward poverty alleviation, microenterprises have long been a focus of interest by the development community (Liedholm & Mead, 1987). More recently, the so-called “pro-poor-growth studies” approach has espoused a strategy of linking small businesses in the informal sector, employment, and poverty reduction (Jutting, Parlevliet, & Xenogiani, 2008).

Unfortunately, here is no generally agreed-upon definition of the term, “micro-enterprise.” As a consequence, it is difficult to aggregate findings and to reach more general conclusions about the relationship between microenterprises and ICTs. All definitions do start, however, by locating microenterprises in the “unorganized” or “informal sector” of developing economies. In operational terms, microenterprises are most often defined in existing research studies by their number of (hired) workers.

The Indian Ministry of Statistics (National Sample Survey Organization, 2000, p. 2), for example, defines the unorganized sector as non-agricultural “enterprises whose activities

or collection of data [about them] is not regulated under any legal provision and/or which do not maintain any regular accounts.” Vaidyanathan (2004) builds on the government definition; but, in a departure, excludes partnerships/proprietorships and self-employed persons such as barbers, cobblers, and cycle-rickshaw pullers. Indian government statistics distinguish two sorts of microenterprises¹: (1) sole-proprietorships, most often home-based, without any hired workers, called Own Account Enterprises (OAEs); and (2) “establishments,” defined as enterprises with at least one hired worker, almost always located in a fixed, non-household location (National Sample Survey Organization, 2000).

The most recent data from the National Sample Survey Organization puts the number of urban OAEs at fifteen million and the number of urban “establishments,” i.e., microenterprises with at least one employee, at more than four million (National Sample Survey Organization, 2000). More recent surveys estimate the number of workers in the urban, informal sector of India to be 74 million, with sixteen million of that total being women (Raveendran, 2006)

More than 60 percent of urban sole-proprietorships (OAEs) are one-person operations, another 25 percent have only two workers; and 95 percent of all urban OAEs have five or fewer employees. In contrast, 19 percent of microenterprises with employees (“establishments”) hire between one and five workers, 60 percent have between six and nine workers on their payrolls and an additional 18 percent have between ten and nineteen employees.

Some studies (e.g., Esselaar, Stork, Ndiwalana, & Deen-Swarray, 2007) confound the distinction between microenterprises and small businesses by classifying “informal operators/survivalists” as businesses with no employees, “informal micro- or small businesses” as businesses with fewer than ten hired workers, and “formal micro- or small businesses” as enterprises that employ between ten and 49 workers. Yet others, citing “development community” practice, cap microenterprises at five or fewer workers (e.g., Donner, 2007) or, invoking International Labor Organization, United Nations, or British government criteria, set the limit at ten employees (Duncombe & Heeks, 2002; Jagun, Heeks, & Whalley, 2007).

For our study, we decided to focus on urban microenterprises that have at least one hired worker. We assumed that having employees, especially higher numbers of paid workers, is a crude indicator that a business might be a “growth enterprise.” Duncombe & Heeks (2005, p. 5) characterize “growth enterprises” as firms “that show a greater business focus and which deliver broader/longer term benefits of competitiveness, innovation, and exports.” Identifying “growth enterprises” is a continuing goal of the development community because with growth comes increased economic efficiency, more jobs, higher income for proprietors and workers, and greater enterprise stability (Mead & Liedholm, 1998; Esselaar, Stork, Ndiwalana, & Deen-Swarray, 2007).

Moreover, many growth enterprises may already be ICT users (Duncombe & Heeks, 2005), since a larger workforce might necessitate increased communication with

¹ The Indian Ministry of Micro, Small & Medium Enterprises (2007), however, takes a different approach, defining microenterprises as those manufacturing businesses with up to US\$62,500 of investment in plant, machinery, or equipment and service businesses with up to US\$25,000 similarly invested.

employees and the maintenance of internal records about payroll, work flow, product output, etc. With growth or expected growth, it is also likely that a microenterprise will require higher levels of communication with suppliers, shippers, and old and new customers. Whether and under what circumstances urban microentrepreneurs turn to ICTs to manage these business communication challenges was inadequately addressed in the literature and we attempted to fill this gap.

THE SPECIAL CASE OF THE URBAN MICROENTERPRISE

We chose to examine urban microenterprises because the increased urbanization of the developing world provides, in our judgment, a largely overlooked locus in which ICTs might be successfully leveraged to support change and development. This optimistic perspective on urbanization of course acknowledges that urban poverty, congestion, ecological degradations, and the like represent extremely serious problems; and in no way does it suggest that efforts to upgrade the lives of rural populations should be discounted. But, since half of the world's six-and-a-half billion people now live in cities and over the next 30 years almost all global population increase is projected to occur in the urban areas of the developing world (United Nations Department of Economic and Social Affairs Population Division, 2006), microenterprises in cities, we believe, deserve special attention.

Indeed, despite their manifold problems, cities are often a comparatively better place for poor people to live. A direct and positive correlation has been demonstrated between the urban percentage of population in low-income nations and higher scores on the U.N.'s human development index, a composite of life expectancy, adult literacy, school enrollment, and gross domestic product (GDP) per capita measures (United Nations Department of Economic and Social Affairs Population Division, 2006). Cities are also generally centers where female labor-force participation is greatest and women's status is higher (Cohen, 2006). Still, how the association between women's greater workforce participation and higher status plays out in terms of women microentrepreneurs and their use or non-use of ICTs remains an open question—one that this report examines.

With regard to cities, microenterprises owned by women, and the use of ICTs, studies in developed countries offer some clues. Martin and Wright (2005) report, for example, that in ten British firms in the ICT sector the relatively low cost of ICTs facilitated the entry of women into entrepreneurship by allowing women to shift from home-based enterprises to office-based, and by opening up online networking opportunities. We do not know whether these patterns from the industrialized North are replicated in the urban South. However, according to earlier research on mass communication in the emerging South, women by and large continue to be a marginalized group in the technological domain (Thas, Ramilo, & Cinco, 2007). Reasons for the low participation, poor accessibility, poverty, and other structural constraints are likely to be similar to those encountered with the "old" technologies. Still, some research suggests that ICTs indirectly impact the lives of women by enhancing their social space in communities by creating feelings of empowerment, and by improving their social networks (Slater & Tacchi, 2005). Nevertheless, most existing research on women and ICTs in the developing world is based on rural experiences.

Two further well-established findings about cities in the developing world strengthen our choice of urban microenterprises. First, there is evidence that urban microenterprises have an almost 25 percent greater chance of surviving their first year than similar rural businesses (Mead & Liedholm, 1998); and second, with regard to the availability of mobile phones and other ICTs, it is clear that the ICTs were rolled out earlier and with higher subsequent penetration in the urban areas of the emerging South (Galperin, 2005; Castells, Fernandez-Ardevol, Qiu, & Sey, 2007). In short, we hypothesized that the urban environment might offer more of the social and economic prerequisites conducive to the adoption and use of ICTs by microentrepreneurs.

Finally, since studies of ICTs and microenterprises have most often done their fieldwork in rural settings (e.g., Duncombe & Heeks, 2002; Galperin & Mariscal, 2005; Konstadakopoulos, 2005, Jensen, 2007) or are based on case studies (e.g., United Nations Development Programme, 2005; Jagun, Heeks, & Whalley, 2007) or on small non-random samples (e.g., Donner, 2004; Molony, 2006), we believe that our research helps fill a gap in the scholarly literature by studying urban microenterprises selected by strict random sampling. The sampling procedure for our project was designed to yield a representative sample of urban microentrepreneurs with a least one hired worker, thus providing a much more precise picture of the use of ICTs by urban microentrepreneurs and the impact of ICT use on very small businesses.

For our empirical investigation, we selected microentrepreneurs in Mumbai City, India. Mumbai is the largest city in India with migrants ever-faster adding to the population. In Chapter 2, we provide further information on Mumbai relevant to the project.

MOBILE PHONES, PCs, AND INTERNET CAFÉS

We decided to focus on three specific ICTs – mobile phones, PCs, and Internet cafés.² Certainly, traditional media (radio, television, film) have a place in ICT4D literature (Duncombe & Heeks, 2005). However, we share the judgment of Benkler (2006) and Castells, Fernandez-Ardevol, Qiu, & Sey (2007) that the newer technologies, especially the mobile phones, are more easily adopted and more readily shaped than the mass media to meet the communication needs of individuals in the developing world.

MOBILE PHONES

With more than a billion subscribers, mobile phones are the most readily available new ICT in the emerging South. Mobiles have been adopted in India and throughout the developing world more rapidly than any other communication technology in history (Castells et al., 2007). Indeed, mobile phone users in developing nations now account for 58 percent of the world's 3+ billion mobile phone users (United Nations Conference on Trade and Development, 2007).

² In the course of our research, it also became clear that plain old telephone service (POTS) in the form of workplace landlines would be worth examining and we do so in Chapters 3 and 4 of this report.

Mobile phones have outstripped fixed-line telephones in most developing nations (International Telecommunication Union, 2007). The number of Indian mobile phone subscribers, for example, surpassed fixed telephone users in October 2004 (Sirsalewala, 2005) and the number of mobile subscribers stood at 209 million in summer-fall 2007 (Telecom Regulatory Authority of India, 2008).

The price of a bare-bones mobile phone in India is less than twenty-five U.S. dollars and a used mobile phone reportedly can be had on the streets of India for less than US\$5 (FoneArena, 2007). In contrast, the latest model SmartPhone, with PC-like functionality, WiFi- and Internet-enabled, currently sells for around US\$450 as part of a package deal from India's largest mobile service provider (Bharti Airtel, 2007). The cost of mobile airtime in India has "dropped to a level unmatched anywhere else in the world. At roughly one US cent a minute, the price is half of that prevailing in China and Pakistan" (Vodafone, 2009, p.11).

In recent years, development researchers have found some, limited evidence to link mobile phone use and economic gains. Perhaps the most well-known of this research are evaluations of the Grameen Phone project (Cohen, 2001) and a study of Indian fishermen who used their mobile phones to sell their catch (Jensen, 2007). Despite the rapid and substantial diffusion of mobile phone in the developing world, however, studies of telecommunication use by microenterprises are not common (see Donner, 2006a, and Donner, 2008, for literature reviews). Moreover, some pioneering studies, while conceptually valuable, were conducted before the explosion of mobile phones in the developing world (e.g., Duncombe & Heeks, 2002). Recent research (Donner, 2004, 2006b; Souter, Garforth, Jain, Mascarenhas, McKemey, & Scott, 2005; Rufaro, Chiware, & Dick, 2008) has tended to focus on the smallest of urban microenterprises. This stream of research has generally reported that micro-entrepreneurs are generally inclined to use their mobile phones for personal rather than business communication and that face-to-face communication is perceived to be more important than using a mobile phone to build business contacts or to maintain or increase customer base.

The use of the mobile phone to provide financial services to the "unbanked" of the developing world has achieved considerable prominence on the international development agenda (Comninos et al., 2008; infoDev, 2006; Ivatury & Pickens, 2006; Porteous, 2006). These banking services include remittances, currency exchange, micropayments, and microloans. To the best of our knowledge, however, the existing literature is silent on the question of how and when microentrepreneurs might incorporate mobile banking into their repertoire of business communication.

The possibility of using mobile phones to gain access to the Internet has been the subject of recent speculation (Boyera, 2006; Gopinath, 2006). Indeed, Telecom Regularity Authority of India (2008) reports 38 million people currently log on to the Internet from their mobile phones. From the perspective of urban microentrepreneurs, the mobile web might be considered a convenient way to read and send emails or to search for business-relevant information online. Of course, those behaviors assume a degree of textual literacy or at the least contact with others who are sufficiently literate and skilled to help with web access (Chipchase, 2005).

Moreover, we know of no data specifying literacy rates among India's urban microentrepreneurs and, among the public at large, the ability to read English, the principal language of the Internet, is reportedly as low as 4 percent (Misra, 2007). While a number of software firms are producing mobile applications in the major languages of India (Gugnani, Arora, & Shukla, 2006; Microsoft India 2008), the software is not widely diffused.

Microentrepreneurs seeking to go online through their mobiles also face other significant hurdles. The lowest-end mobile phones do not have Internet browsers, although it is also increasingly true that the second-least expensive level of mobiles is Internet-ready (Bothra, 2006). In September 2009, out of 471 million subscribers in India, only 27 percent were capable of accessing the Internet, and out of these only two million were active users (IAMAI, 2010). With introduction of new technologies like 3G and WiMAX, combined with competition, the number of mobile-web users is expected to increase.

Given the limitations on mobile web use recounted above, it is not surprising that we know of no published research on mobile web use by urban microentrepreneurs. Still, the telecommunication landscape in India is changing rapidly and our data-gathering efforts included questions designed to find any early instances of mobile web use by urban microentrepreneurs.

PCS AND BROADBAND

If, as our data show, microentrepreneurs are currently making almost no use of mobile phones to access the Internet, then some owners and/or managers of these very small businesses still might find it helpful for business purposes to go online via a PC, perhaps even with a broadband connection. Industry estimates predicted that the worldwide installed base of PCs would reach one billion by the end of 2008 (Yates, 2007). While broadband penetration in the developed North runs at eighteen per hundred inhabitants, it is only slightly more than one per hundred in the developing world (UNCTAD, 2007).

Widely cited estimates put the number of PCs in India at approximately 22 million (IDC India, 2007) and active PC users at 87 million in 2009 (IAMAI, 2010). New computers are available for as little as US\$300 and used, reconditioned models can be had for around US\$80 (Duncombe & Heeks, 2005). However, optimal computing requires a relatively dust-free environment to house the PC and a constant energy source or "unlimited power supply" machine (US\$ 40).

The cost of Internet connectivity in India adds approximately US\$12 per month. However, only one-third of India's PCs are connected to the Internet and, of the ten million Internet subscribers, only 20 percent have broadband access (International Telecommunications Union, 2007; TRAI, 2008). Moreover, Internet use remains a behavior of the well educated and well off, with only 5 percent of the estimated 46 million urban Indians who have ever used the Internet coming from the bottom-of-the-pyramid socioeconomic levels D or E (IAMAI, 2007). As to PCs for business, UNCTAD (2006) reported that 61 percent of Indian enterprises with ten or more employees used computers, but did not collect data about smaller microenterprises. Donner (2007)

surveyed very small businesses ($N_{\text{employees}} < 6$) in Hyderabad and found that 7.6 percent owned a PC.

Given the comparatively low levels of PC penetration in the developing world, it is scarcely surprising that the literature on PC use in urban micro or small enterprises is sparse. Across both pioneering and recent studies, there is, however, a consensus that proprietors of micro- or small businesses believe that PCs are less important for their work than the fixed-line telephone (Duncombe & Heeks, 1999) or the mobile phone (Molony, 2005; Donner, 2006b; Esselaar, Stork, Ndiwalana, & Deen-Swarra, 2007). Still, the causes for this belief are not clear. Possible factors include the cost of a PC and Internet connection; a steep learning curve for computer skills; the perceived lack of need to interact with other vendors and clients; a lack of basic literacy; or low diffusion rates for local language software. Our study explored some, but not all, of these factors .

It is important to note that PC penetration rates may be an underestimate of actual usage, as the PC is a tool that can be shared among various members of the enterprises who might be performing different functions. There is also a possibility that the PCs can be shared between business-place use and home use. The presence of desktop publishing shops in Indian market areas, where PCs are available for use on a timed basis, is an example of how shared PCs can be as a tool for revenue generation as well. Moreover, a similar logic of shared computer access that increases penetration rates applies to Internet cafés.

INTERNET CAFÉS

By Internet café or cybercafé, we mean a commercial establishment that offers Internet access to the public on a pay-per-use basis. For the purposes of our research, we will distinguish commercial Internet cafés from governmental or NGO projects such as telecenters, kiosks, and telecottages. Although telecenters/kiosks/telecottages are more likely to be found in rural areas (Sharma, 2007), we included questions in our survey that tap into all forms of public Internet access, if it occurs.

No reliable count of cybercafés exists for the developing world. The most commonly cited number of Internet cafés in India, for example, is widely reported to be 50,000. However, since that number has not been updated in more than three years, it should be considered at best a rough approximation (Caslon Analytics, 2007). Still, regardless of exact numbers, cybercafés are thought to hold significant development potential, particularly in urban settings, where they might provide inexpensive Internet access to people without PCs and broadband access (Haseloff, 2005; Hobbs & Bristow, 2007). Internet cafés in India, for example, routinely charge US 25 cents per hour for access; they can commonly be found in working class neighborhoods (Nisbett, 2005); and in the case of Mumbai, even in the Dharavi slum (Rangaswamy, 2007b).

Ethnographic studies suggest that the preponderance of computer time purchased in India's Internet cafés is devoted to email, online chats, and Internet browsing (Chawla & Behl, 2006; Rangaswamy, 2007a). Most studies also report some use of Internet cafés for business purposes, although the evidence is often anecdotal. However, no published

research to date has systematically probed the precursors, extent, or impact of this behavior for urban microenterprises.

In light of the above discussion, we sought a better understanding of the relationships of ICTs—specifically mobile phones, PCs, and Internet cafés—to urban microenterprises in the developing world. Specifically, our study of microentrepreneurs in Mumbai City collected data about the ownership and usage of ICTs in microenterprises and the relationships between ICTs use, characteristics of the microenterprises and microentrepreneurs, and the growth of microbusinesses.

Chapter 2: Research Methods

METHODOLOGICAL HIGHLIGHTS

- Conducted a field survey to capture patterns of ICT ownership and usage by urban microentrepreneurs.
- Defined microenterprises as very small businesses with one to nineteen hired workers.
- Carried out fieldwork in Mumbai City, India, April–June, 2008.
- Implemented a rigorous multistage cluster sampling using *urban frame survey* maps of National Sample Survey Organization.
- Completed structured interviews with a total of 661 microentrepreneurs in three phases:
 - 329 men who own or manage microenterprises
 - 231 women who own a microbusiness
 - 101 microentrepreneurs who use the Internet at work or in Internet Cafés

For the purposes of this study, we defined a microenterprise as a business that had more than one hired worker, but fewer than twenty hired workers. This definition emerges from earlier research (Duncombe, 2006) that compared single-person, “survivalist” businesses whose stability and growth is fragile to “entrepreneurial” enterprises that had at least one hired worker and that generally were more sustainable. These entrepreneurial businesses are also known as “growth enterprises” and are strongly linked to economic development (Duncombe & Heeks, 2005).

We selected Mumbai City in India as the site for exploring the current and potential patterns of mobile phone, PC, and Internet café use among urban microentrepreneurs and the implications of those ICTs for economic development for several reasons. Mumbai is India’s largest urban area. It had 24.3 million mobile subscribers as of December 2009 and the number of subscribers is growing at 8.2 percent per year (TRAI, 2010). In addition, the informal sector—“home” to the urban microentrepreneurs—accounts for two-thirds of total employment in Mumbai (Srivastava, 2005).

Despite a growing literature and accelerated interest among international donors and policy agents, insights from most published research have not been especially generalizable due to shortcomings in sampling design. Probability sampling has rarely been followed.³ Indeed, we are unaware of any large-scale, published study specifically investigating ICT use by urban microentrepreneurs that is based on a rigorous probability sample. In fact, throughout the literature, data-gathering, in both urban and rural settings, almost universally follows a non-random sampling strategy in which respondents are acquired either through their social networks or on an availability basis. For instance, Esselaar et al. (2007) collected data from 3,691 small and medium enterprises, but reports that “no random sampling procedure was used, but the businesses were selected based on

³ For one important exception, see Stork and Stork (2008), which enumerated *household* but not business-based ownership and use of ICTs in 17 African countries.

their profile” (p.88). Similarly, the “participant-sample was purposive rather than random” in Donner’s study of 31 microentrepreneurs in Rwanda (2004, p. 7). The few studies that do follow random sampling do not always provide very detailed information on the selection process (see for example, Frempong, 2009). While non-probability sampling is completely acceptable when the study is exploratory or the sample is too difficult to obtain (Babbie, 2004), we do not believe that those difficulties are always insurmountable, as our sample design demonstrates.

A major difficulty in carrying out a probability sample lies in the fact that there are no complete, accurate listings of microenterprises in Mumbai City. As a consequence, we decided it would be more appropriate to take a geographic or mapping approach. We identified two types of standardized geographic units that covered the entire city of Mumbai—electoral wards drawn up by the Election Department of the Municipal Corporation of Mumbai and the Urban Frame Survey (UFS) mapping scheme of the National Sample Survey Organization (NSSO) of the Indian government.

Mumbai is divided into 227 electoral wards and each ward consists of 10–20 streets. Electoral ward information is made available online in the Marathi language by an NGO, Karmayog, based in Mumbai. For each ward, boundary outlines and some ward office contact information were available, but with little additional detail. We contacted the ward offices and were told that maps might be available with the Election Department of the Municipal Corporation of Mumbai, whose contact details were not present online.

We also wanted to explore the possible utility of the NSSO’s Urban Frame Survey (UFS). The first author went to the NSSO office in New Delhi and learned about a subset of the UFS called the investigative unit (IV), a census area consisting of many UFS blocks. UFS blocks are

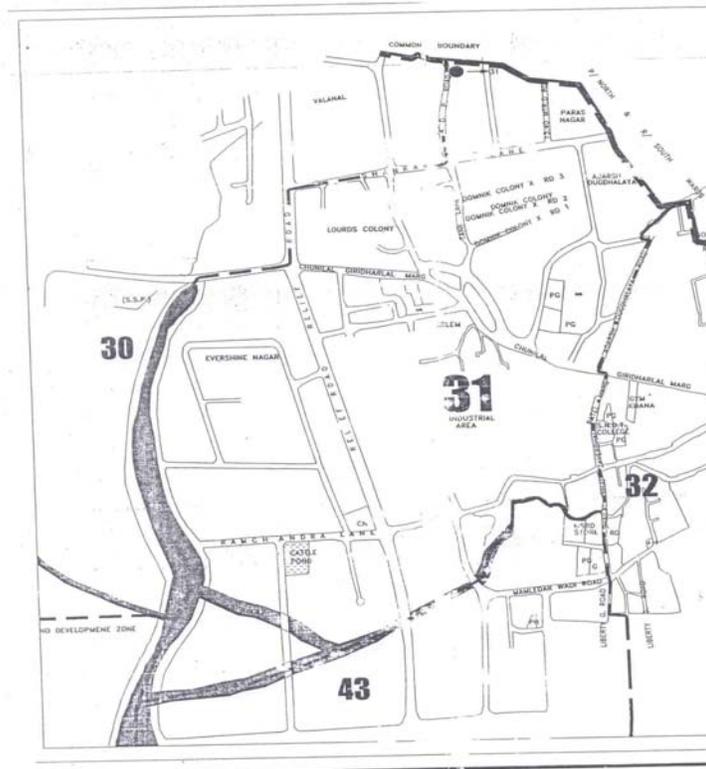
formed (like enumeration blocks in Census Operations) taking into account the increase/decrease in the population of cities/towns/urban agglomerations and also in newly declared towns. Each town/city is divided into aerial compact UFS blocks with clear cut identifiable boundaries and permanent land marks having with the population content of 600 to 800 and 120 to 160 number of households (downloaded from http://www.mospi.nic.in/fod_surveys_uf.htm).

We obtained an example of an IV unit for New Delhi: a hand-drawn map showing many blocks and indicating streets, lanes, and landmarks such as apartment buildings, hospitals, temples, and mosques. Even though the New Delhi office is the headquarters of NSSO, it was unable to provide detailed information about number of IV units in Mumbai. That information was available, however, in the Mumbai office, and we were invited to visit in person to learn more. Both authors visited Mumbai for a week to explore the appropriateness of the sampling frame: electoral wards or UFS blocks. We were supported by a local graduate student who is familiar with the local language, Marathi, and speaks Hindi.

Earlier, using a random number table, we had selected 31 out of Mumbai’s 227 election wards as potential interview sites by simple random selection. We randomly selected one of the 31 wards to inspect, not knowing whether there were microenterprises there or not. Unfortunately, the electoral ward maps proved sketchy and lacked details of many lanes

or streets (see Figure 1). Using a commercial detailed map (Eicher, 2002), we tried to locate the ward area and major landmarks. Though we were able to find the ward area and locate microenterprises, it was time consuming. We were able to find and move about in only one ward in three hours. We quickly realized that it would be difficult to create effective fieldwork guidelines identifying sampling interview points. This clearly suggested to us that an alternative, more efficient approach was needed to identify the first stage of the multi-stage sample.

FIGURE 1: Typical Ward Map of Mumbai



SAMPLE DESIGN

On visiting the NSSO office, we were told that there were exactly 900 IV units in Mumbai. Thirty-one IV units were selected on the basis of circular systematic random sampling. We randomly picked a number between 001 and 900 to identify the first IV unit. From this number 29 was subtracted to get the next IV unit⁴. Similarly, 29 was

⁴ Twenty-nine was arrived at by dividing the total number of IV units by the number of required IV units (900/31).

We next assigned a number to each corner of each block, going clockwise around the block starting in the uppermost left-hand corner. One of the corners was then selected by simple random sampling. That corner became the final stage in the multi-stage cluster sample and was the starting point for the interviews.

Interviewers were instructed to follow a predetermined, random walk from the starting point. As a part of providing instructions to the survey interviewers, we listed four possible directions (left, right, forward, back) and all possible ways of walking in any Indian road/street. Directions were assigned a number in ascending order. For each interview, a number was chosen randomly. Using these instructions, the first interview was conducted with the first microenterprise when interviewer walked from the starting point along the traffic. Then the interviewer started walking in the opposite direction and got the second interview. (See Appendix A for the instructions to the field interviewers.) Once the interviewer reached the quota, no additional businesspersons of that type would be interviewed. Interviews were to be conducted only within the selected IV unit. An incentive of Rs. 600 (~ US\$12 in the form of a bank check, equal to four days' wages for a semi-skilled urban worker in India) was provided to respondents as partial compensation for the time needed to complete the survey. A total of 330 interviews were conducted. Out of 330 interviews, only one woman microentrepreneur was identified and interviewed. In the further analysis, that female respondent was deleted, thus making the population of the first data set exclusively composed of male owners or managers.

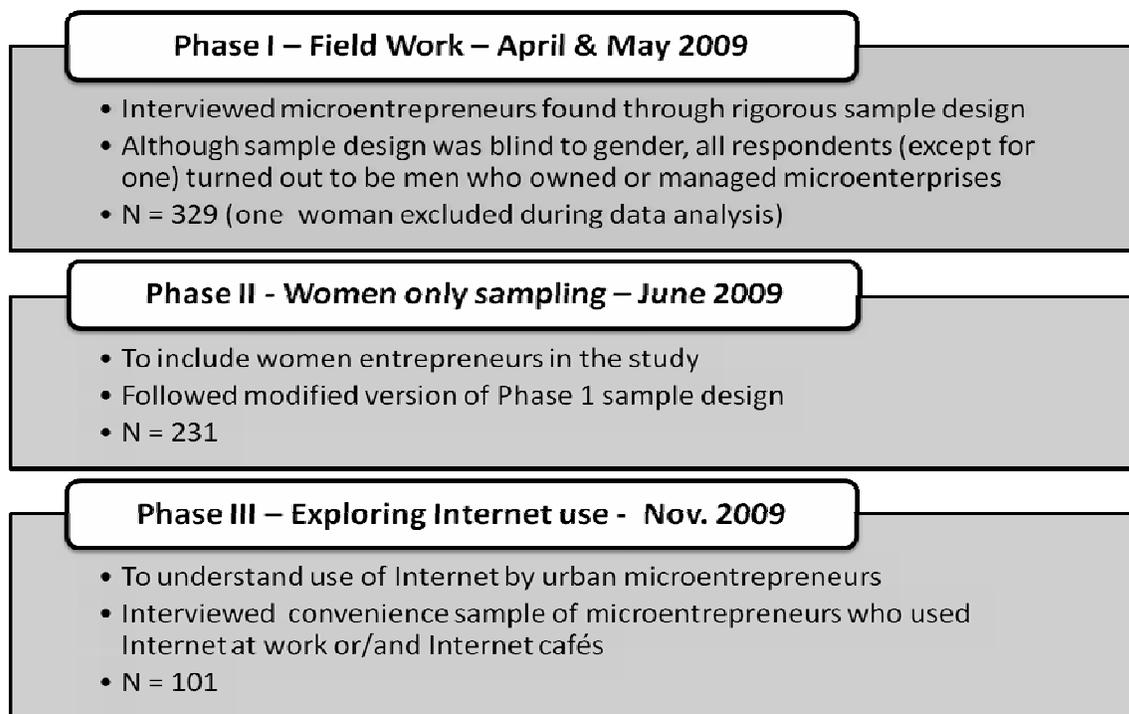
Since the research literature and the pilot study, detailed below, had led us to anticipate the possibility that female owners were likely to be few in number among the microenterprises examined by a random sampling strategy, and since this expectation was confirmed by the all-but total absence of female microentrepreneurs in the first sample, we decided to respond with a new round of interviews where only women microentrepreneurs would be interviewed.

This second data collection effort followed a modified version of the original sampling strategy. The same starting point in the IV unit used in the first round of interviews was employed by the interviewers to look for female entrepreneurs. Once an eligible respondent was located, interviewers were instructed to follow a snowball approach to locate subsequent respondents, since the random walk strategy was not producing adequate numbers of female respondents.

However, to approximate the sampling method used in the first wave of interviews and to ensure adequate representation of various sized microenterprises, interviewers were asked to complete a set of interviews based on the NSSO quotas within each of the sampled IV units: one business with 1–6 hired workers, four with 6–9 hired workers, one with 10–19 hired workers, and one from any of the three preceding categories. These quotas reflect the distribution of microenterprises by number of hired employees as reported by the NSSO. In six of 31 IV units, interviewers were unable to identify eligible respondents within the IV boundaries and were instructed to move slightly outside of the IV to complete the quotas. However, since contiguous IV units shared similar social and economic characteristics, we believe this procedure to have no serious implications for the integrity of the rigorously constructed probability sample. Following this process, we collected data from 231 female owners of very small businesses.

After preliminary analysis of the data, we found that only 5 percent of respondents went to Internet cafés or used a workplace PC to go online. Since those numbers prevented us from gaining any insights into how microentrepreneurs utilize those two ICTs, we decided to carry out a third set of interviews to specifically explore Internet use at work and in Internet cafés. We call this data set the “exploratory sample” in the report. When the survey interviewers were unable to locate microentrepreneurs with the desired characteristics within the random sample of IV units, we instructed the agency to carry out a convenience sample concentrated in market or business areas nearby the IV units. The goal was to wind up with a data set (N = 120), divided equally between users of Internet cafés and respondents who used the Internet at work and between men and women. Once again, identifying eligible female respondents proved difficult, with the resulting data set (N = 101) including 58 male microentrepreneurs and 43 female businesspersons. Given the sampling design for this exploratory data set, its findings must be interpreted with some caution and will be reported only in rather broad terms. Different phases of the fieldwork are presented schematically in Figure 3.

FIGURE 3: Phases of Fieldwork



Field interviews were conducted by GNN Market Research Private Limited, a marketing research firm with considerable experience in Mumbai. GNN was selected through an open bidding process. A notice inviting quotations from market research agencies was uploaded in the call for tenders section of the home page of the Indian Institute of Technology-Delhi (IITD). An email was also circulated among all local market research firms. Tender details, including work expectations and bidder capabilities, were specified

by a committee composed of four faculty members from IITD including the first author. Expectations and eligibility criteria of the agency were also identified and articulated in the call for quotations. A total of four quotations was received, with GNN Market Research offering the most competitive bid. GNN was awarded the contract after the quality of its work was confirmed with previous clients.

Fieldwork was conducted during April, May, and June 2009 for the first and second phases, and in September and November 2009 for Phase III. The response rate was 67 percent for both the sample of male and female microentrepreneurs and 85 percent for the exploratory sample. The first author and the research assistant at IITD called all respondents to verify that the interviews had been conducted. In approximately 10 percent of all cases, it was not possible to contact respondents despite multiple attempts. GNN provided raw data on an Excel spreadsheet, which was subsequently converted into SPSS format (for supplementary SPSS analyses, see Appendix B). The accuracy of data transcription was systematically crosschecked by the first author and research assistants, with hard copies of the questionnaires consulted whenever needed.

QUESTIONNAIRE CONSTRUCTION

The questionnaire was developed through a pilot study of qualitative interviews. An interview guide was prepared based on the review of literature. The guide consisted of an inventory of keywords under major themes (see Table 1).

TABLE 1: Discussion Guide for the Pilot Study Interviews

Major Themes	Keywords
Microenterprise characteristics	Year of establishment; form of ownership; number of hired employees; gender composition of employees; economic sector; type of registration; and type of financial records kept
Microentrepreneur demographics	Age, gender, years of formal education; years of business experience; nature of ICT usage; place of birth and, if relevant, year of migration to Mumbai; and microentrepreneur's perception of enterprise history and growth
Mobile phones	From when; how many; nature of phones: low, medium, high; who uses; what functions are used
Personal computers	From when; how many; capability of PCs – chip, audio, video; Internet connected; who uses; what functions are used
Internet café	Why café; who uses; and how far from business
PC and Internet usage at home	From when; is it only at home / why; who uses; and what use – business or personal
Usage	Within firm (payroll; finance; recruitment; production); outside firm (with customers; suppliers; trade friends); which ICT is used more; frequency of interaction; nature of interaction using ICT).

The first author, along with a graduate student at IITD conducted open-ended, in-depth interviews with eight entrepreneurs and two managers of the microenterprises.

Respondents for the pilot study were selected using non-random, convenience sampling. Interviews for the pilot study lasted 30–40 minutes. Interview locations were extremely noisy, hampering attempts to audio record them. We quickly learned it was imperative that interviewers be fluent in the local language. Additionally, in two of the microenterprises we examined, the owners did not come often to the work premises; those businesses were run by senior workers or managers. Hence we decided that, if an interview could not be arranged with the owner of the microenterprise, managers could be interviewed instead. Not surprisingly, we found this initial group of respondents was reluctant to reveal the number of hired workers largely because they wished to avoid what they perceived to be unfair or unreasonable labor regulations. Moreover, even though these enterprises file income tax returns with the government, the owners/managers did not want to reveal the amount of tax paid or the business' annual revenue.

Initially we had planned to ask respondents to disclose the amount of business income in real money terms. During the pilot study, it became clear that entrepreneurs were either reluctant to reveal the requested information or declined to answer altogether. Indirect questioning (e.g., “How much money would it take to start a business like this now?”) failed to gain compliance. Later discussions with field investigators reinforced our observation that it would not be possible to acquire business income data. Hence, the final questionnaire items asked only about year-over-year changes to microenterprise income. We decided, however, to ask directly about actual numbers of hired workers. In subsequent field visits respondents seemed generally willing to comply.

Based on the pilot-study observations, a draft of the structured questionnaire was created. The draft questionnaire was a substantial 104 pages long. However, with built-in skip patterns, large blocks of questions on mobile phones, computers, and Internet cafés were to be asked only if respondents indicated their use. Thus, for example, if a given enterprise used only a mobile phone, questions about computer and Internet café behaviors would be rendered irrelevant and would not be asked. The first author, along with external survey interviewers, tested the questionnaire in Chandni Chowk neighborhood, a conveniently located area in New Delhi. We believed that Chandni Chowk was an appropriate site for the pre-test since it roughly approximates Mumbai in density and type of microenterprises present. Seven interviews were conducted and instructions for the random walk were tested.

In the second phase of the pilot study, the draft questionnaire took a minimum of 45 minutes to administer. Except for one interview, all interviews were discontinued after 60 minutes, as respondents became impatient with the interviewer and declined to give further answers. In fact, some respondents appeared annoyed even by the physical size of the questionnaire. Subsequently, we removed some items from the draft and, based on one additional interview, we determined that the slimmed down interview would run approximately 45 minutes with three short breaks of a few minutes each between sections for interviewers and respondents to rest. With the help of a professional copy editor, the size of the questionnaire was brought down to 40 pages.

The first author, along with a research assistant, traveled to Mumbai and trained the survey interviewers about the questionnaire and the random walk procedure. Coached by

the research assistant, survey interviewers carried out mock interviews with each other and demonstrated the random walk. Based on the interaction with the survey interviewers, it was decided that Hindi questionnaires would be used in the fieldwork and that each interviewer would carry an English version of the questionnaire for comparison purposes, if needed. Earlier, the questionnaire had been translated to Hindi from English and subsequently back-translated to English. Two separate agencies were involved in translating the questionnaire. A comparison of the two English versions found substantial agreement, indicating that a linguistically and culturally Hindi text had been created.

The final questionnaire for Phase I consisted of three parts, A, B, and C. Part A gathered information on ICT ownership at the enterprises and home, enterprise details, and uses and gratifications items for ICTs. Part B focused on how ICTs are used for business and personal purposes. Part C collected background information on the respondents. In Part A of the Phase I questionnaire, there was a small section exclusively for the managers. The questionnaire for Phase I can be found in Appendix C.1.

For the second phase of the fieldwork—gathering data exclusively on women—the subsection on managers in Part A was removed, since all eligible female respondents were business owners. Some specific questions were added in both parts A and C, including the queries on the number of working hours (both in the microenterprise and at home), the number of children, the support system available at home, the gender of business contacts, and respondent perceptions of her social status (see Appendix C.2 for details). Part B of the questionnaire for female microentrepreneurs was the same as the questionnaire in the Phase I sample of male owners/managers.

In the third round of fieldwork—gathering data from an exploratory sample to understand use of the Internet in the workplace and at Internet cafés—a modified version of the questionnaire from Phase I was created. Questions related to other ICTs were removed from parts A and B. Questions relating to use of workplace computers and Internet cafés were moved to earlier parts of the questionnaire. For the resulting questionnaire, consult Appendix C.3.

For all questionnaires, “show cards” for multiple Likert-type responses were used (see Appendix C.4 for details). Ten sets of questionnaires were made for Phases I and II of the fieldwork. Uses and gratifications items, sixteen each for: mobile phone, PC at work, and PC at Internet cafés, were randomized in these ten sets. These ten sets of questionnaires were used. After the data collection, all ten sets of questionnaires from both the phases were recoded into a single uniform set and used for data analysis.

Quantitative data were analyzed using SPSS 16 and 17. Appropriate statistical tests were employed and are explained in the body of the report. Open-ended responses in Hindi were translated into English and were listed on a spreadsheet. Every unique response, without any interpretation, was given an identification code. Later in the analysis, responses were reduced to fewer categories by merging responses with similar meanings. For example, for a question on “why respondents did not use mobile phones to call employees” the following responses—“not required,” “not needed,” “we don’t need,” “it’s not needed”—were all clubbed to form one category called “not required.” Discussion of open responses is found throughout the report.

DESCRIPTION OF RESPONDENTS

Respondents in all three samples were approximately of the same age, with the mean age of men at 35 years ($SD = 10$), the mean age of women at 27 years ($SD = 10$), and the exploratory sample with mean age of 32 years ($SD = 8$). Respondents in the exploratory sample appeared to be slightly younger than the respondents from the samples of only men or only women (for complete details of respondent characteristics, see Table 2).

Male and female respondents showed similar patterns of formal education. About one-third of male microentrepreneurs (34 percent) and 33 percent of female microentrepreneurs were high school finishers. More women (39 percent) than men (32 percent) in our sample had completed a bachelor's degree. Respondents from the exploratory sample, however, were far better educated, with approximately three-quarters having earned a bachelor's degree and a remarkable one out of ten holding a master's degree. Moreover, somewhat fewer than half of respondents from the exploratory sample had undertaken formal computer training. While the proportion of male owners/managers (25 percent) and female owners (24 percent) with formal computer training was smaller, those numbers are, in our judgment, non-trivial.

TABLE 2: Respondent Characteristics

Variables	Men	Women	Exploratory
Age (in years)	$M = 35$ ($SD = 10$)	$M = 27$ ($SD = 10$)	$M = 32$ ($SD = 8$)
Education	Primary school finishers: 16% High school finishers: 34% Higher secondary school finishers: 17% Bachelor's degree: 32%	Primary school finishers: 6% High school finishers: 33% Higher secondary school finishers: 19% Bachelor's degree: 38%	High school finishers: 5% Higher secondary school finishers: 9% Bachelor's degree: 75% Master's degree: 11%
Formal computer training	26%	24%	42%
Simple arithmetic ability	54%	40%	27%
Tax-related mathematics ability	37%	56%	70%
Marathi language ability (read, speak, and write)	75–78%	71–72%	97–98%
English speaking ability	49%	56%	98%
English reading ability	60%	70%	97%
English writing ability	57%	68%	98%

In terms of numerical ability, men who owned or managed microenterprises and women who owned very small businesses appear to differ substantially. Over half (54 percent) of men said they could do simple arithmetic compared to 40 percent of women respondents. On the other hand, only 37 percent of men said they could perform tax-related mathematics, while substantially more women (56 percent) said they were able to do so. Although slightly more than one-quarter of respondents from the exploratory sample

could do only simple arithmetic, upwards of three-quarters claimed to be capable of performing tax related calculations.

All respondents in this study knew how to speak, read, and write, Hindi, an official language of India. Some 75 to 78 percent of male owners/managers spoke, read, and wrote some combination of Marathi, the local language of Mumbai, compared to 71 to 72 percent of female respondents and almost all respondents in the exploratory sample. In English language capabilities there were also differences across groups. For example, 98 percent of the Internet-use sample could read, speak, and write English. However, only 49 percent of male respondents could speak English, compared to 56 percent of female respondents. Some 60 percent of men could read and 57 percent could write English, whereas among women 70 percent could read and 68 percent could write.

Microenterprises in the two main sample sets were on average a decade old with a median of ten years in businesses owned/managed by men ($M = 15$; $SD = 15$) and a median of nine years in female-owned microenterprises ($M = 12$, $SD = 12$). Exploratory sample enterprises were relatively new, with a median age of five years ($M = 8$, $SD = 8$). Virtually none of the microentrepreneurs interviewed owned more than one business or worked for an owner with more than one additional microenterprise (see Table 3).

The average number of hired workers fell between a mean of six for businesses owned by women ($SD = 3$), a mean of seven for microenterprises owned/managed by men ($SD = 4$), and a mean of five ($SD = 4$) in the exploratory sample. About half of the very small businesses sampled had between six and nine hired workers, the exact figures being 49 percent in microenterprises owned/managed by men and 52 percent in female owned businesses. Only 17 percent of businesses owned by women had ten to nineteen hired workers, while slightly more microenterprises (20 percent) owned/managed by men had a similar workforce. Some 32 percent of female-owned microenterprises fell into the smallest category with one to five hired workers, as did the same percentage of businesses owned/managed by men. We found that only 2 percent of workers in female-owned businesses were women, that a similarly low proportion of hired workers in the exploratory sample were women, and that there were no female hired employees in the microenterprises owned/managed by men. Indeed, in our experience, most low-level workers in services and trade are men. It would be unusual, for example, to find a woman tailor working for another tailor, male or female.

Sampled microenterprises were predominantly located in the trade and services sectors of the economy. In none of the three samples were more than 5 percent of the businesses in the manufacturing sector. Overall, the dominant sector was trade, with 58 percent of microenterprises owned/managed by men and 52 percent of those owned by women falling into that space. Between 140 and 150 different business domains were reported in the two main samples. For example, in the trade segments the following domains were found: sun-blocking window film for cars, sales of watches, vadapav (a vegetarian sandwich), undergarments, spices, sanitary stores and tiles, papadams, betel leaves, onions and other vegetables, novelty goods, music instruments, medicines and jewelry, etc. In the services space, we found small business operating in catering, dressmaking, automobile servicing, dry cleaning, travel, and recruitment, among others.

TABLE 3: Microenterprises Characteristics

Characteristic	Male Owned/Managed	Female Owned	Exploratory
Age (in years)	$M = 15$ ($SD = 15$)	$M = 12$ ($SD=12$)	$M = 8$ ($SD = 8$)
Hired workers (number)	$M = 7$ ($SD = 4$)	$M = 6$ ($SD = 3$)	$M = 6$ ($SD = 4$)
Business domain	Manufacturing: 4% Services: 39% Trade: 57%	Manufacturing: 2% Services: 42% Trade: 56%	Manufacturing: 2% Services: 52% Trade: 46%
Type of customers *	Walk-in: 95% Neighborhood: 50% Through mobile phones: 23%	Walk-in: 99% Neighborhood: 61% Through mobile phones: 14%	Walk-in: 99% Neighborhood: 46% Through mobile phones: 60%
Registration with the government	37%	54%	87%
Bank account for business purposes	58%	59%	78%
Accounting practice	No accounting followed: 17% Hand accounting, not given to professional: 73%	No accounting followed: 23% Hand accounting, not given to professional: 36% Hand accounting, given to accountant: 33%	Accounting maintained at home PC: 10% Accounting done at PC at work: 75%

*Multiple responses allowed.

Among the different types of potential customers, walk-ins predominated in comparison with possible customers from other parts of Mumbai, outside Mumbai, or abroad. In fact, nearly all sampled businesses had a majority of walk-in customers. Still, at least half of both female owners and male owners/managers reported having customers from other neighborhoods of Mumbai. No respondents from the sample of men or women said they had customers from outside India, although a very small number of respondents from the exploratory sample said they did. One-quarter of all three sets of microenterprises communicated with customers by mobile phone.

The formal status of microenterprises differs across the three data sets. While one-third (37 percent) of male owners/managers said their businesses were registered with the government and more than half (54 percent) of female-owned microenterprises were similarly licensed, more than three-quarters of microenterprises in the exploratory sample had registered. In addition, while more than half of both female-owned businesses (59 percent) and microenterprises owned/managed by men (58 percent) had bank accounts for business purposes, approximately three-quarters of microenterprises in the exploratory sample had similar bank accounts.

The sophistication of financial and business record keeping differed across the three sample sets. Similar proportions of female microentrepreneurs (23 percent) and male

owner/managers (17 percent) keep no business records at all. In 35 percent of microenterprises owned by women, records were written by hand but not reviewed by an accountant. This contrasts with the procedure in microenterprises owned/managed by men, where 73 percent of the male businesspersons kept hand-written records and did not have an accountant. One-third (36 percent) of women said they passed their handwritten records on to an accountant, contrasted with a meager 2 percent of male owners/managers.

While the discussion above highlighted the common variables across the three datasets, it is also possible to focus on specific variables from each dataset. In the male-only sample, 42 percent of respondents were managers and 58 percent were male microenterprise owners. One-third (33 percent) of managers were related to the owner either through marital or blood relations. Managers were slightly younger (median age 31 years) than owners (median age 35 years). Slightly more managers (58 percent) than owners (50 percent) could do only simple arithmetic, while more owners (40 percent) than managers (33 percent) said they could perform tax-related calculations. Education levels of managers and owners were not significantly different. Among managers, 35 percent have passed out of high school and 26 percent held a bachelor's degree. Among owners, the two predominant categories were high school finishers (32 percent) and holders of a bachelor's degree (34 percent). A larger number of managers (30 percent) than owners (23 percent) had undertaken formal computer education training.

On average female microentrepreneurs spent eight hours a day ($SD = 1.9$) on business-related activities. Female microentrepreneurs said that women constituted 49 percent of their customers, 27 percent of their suppliers and 89 percent of their business friends. Most women sampled (87 percent) were married and 10 percent were not. Some 85 percent have at least two children and 12 percent of women who own microenterprises bring their children to the workplace.

Chapter 3: ICT Uses and Contexts

KEY FINDINGS

- Most microentrepreneurs have mobile phones.
- Mobiles are used to contact customers, suppliers, and other business people.
- Many microenterprises have landlines.
- Female-owned microenterprises with the most hired workers have the greatest percentage of workplace computers.
- Still, use of home or workplace computers for business is limited.
- Younger, male microentrepreneurs are most likely to frequent Internet cafés for business purposes.

ICT USE BY URBAN MICROENTREPRENEURS

In this section, we will present findings about ownership and other forms of access to mobile phones, landlines, PCs and laptops, the Internet, and Internet cafés by urban microentrepreneurs. Physical access, however, is not the first step toward integrating ICTs into the microbusiness environment (Van Dijk, 2005). Rather, ICT use must be preceded by such factors as adequate education, ICT-relevant skills, and motivation to use ICTs. For the sake of narrative clarity we will reserve our discussion of those issues for later in this report and stipulate for the moment that our respondents possess adequate human capital on those dimensions to have acquired and use ICTs in their microenterprises, if they so choose. It is clear that the microentrepreneurs interviewed in our rigorous probability samples have overwhelmingly high levels of access to the mobile phone, much more modest access to workplace computers, and limited interest in using computers in Internet cafés.

MOBILE PHONES

Almost all (90 percent) of male owners/managers and slightly fewer (88 percent) female microenterprise owners had a mobile. On average all male microentrepreneurs had purchased their first mobile 3.7 years ago ($SD = 2.38$) and the female business owners had bought theirs 2.8 years ago ($SD = 3.59$). This suggests that urban microentrepreneurs might be considered relatively early adopters of mobile technology, not all that far behind the urban middle classes in choosing to acquire the then rapidly diffusing mobile technologies.

Phone-sharing by those who did not own a mobile added an additional 4 percent of users to the category of male microentrepreneurs. However, no women who owned a business said they engaged in a similar ICT-sharing behavior. Possible explanations for this behavior by female microentrepreneurs include: (1) a sense on the part of these women that, as we report later in this chapter about other ICT behaviors, there is “no need” to share, since almost all female microentrepreneurs have mobiles; (2) a reluctance to give personal contact details to men or non-family members; or (3) the difficulty in finding

other female microbusiness owners who work or live nearby and hence whose mobiles would be easily accessible.

Based on data about seven mobile phone characteristics (e.g., camera, Internet enabled, MP3 player, picture messaging, and the like), we were able to estimate the cost of each mobile being carried by the respondent. The mean estimated price for mobiles owned by all men interviewed was roughly INR 2,500 ($SD = INR 1,600$), or US\$53 (47 INR = 1 US dollar). Almost seven in ten men (69 percent) owned the most basic model of mobile, selling for approximately INR 1,500, or US\$32. Perhaps of greater importance, we found that 16 percent of male respondents had mobiles that cost at least INR 5,500, which meant they already owned Internet-enabled phones or were financially able to do so, if they wanted to or chose to.

In contrast, women owners of microenterprises owned on average less expensive mobile phones, with an approximate mean of INR 2,100 ($SD = INR 1,300$), or US\$44, and almost three-quarters (74 percent) had a basic INR 1,500 model. Only 9 percent owned a mobile that cost at least INR 5,500, which suggests that approximately one female microentrepreneur out of ten had the financial capacity to purchase an Internet-enabled phone.

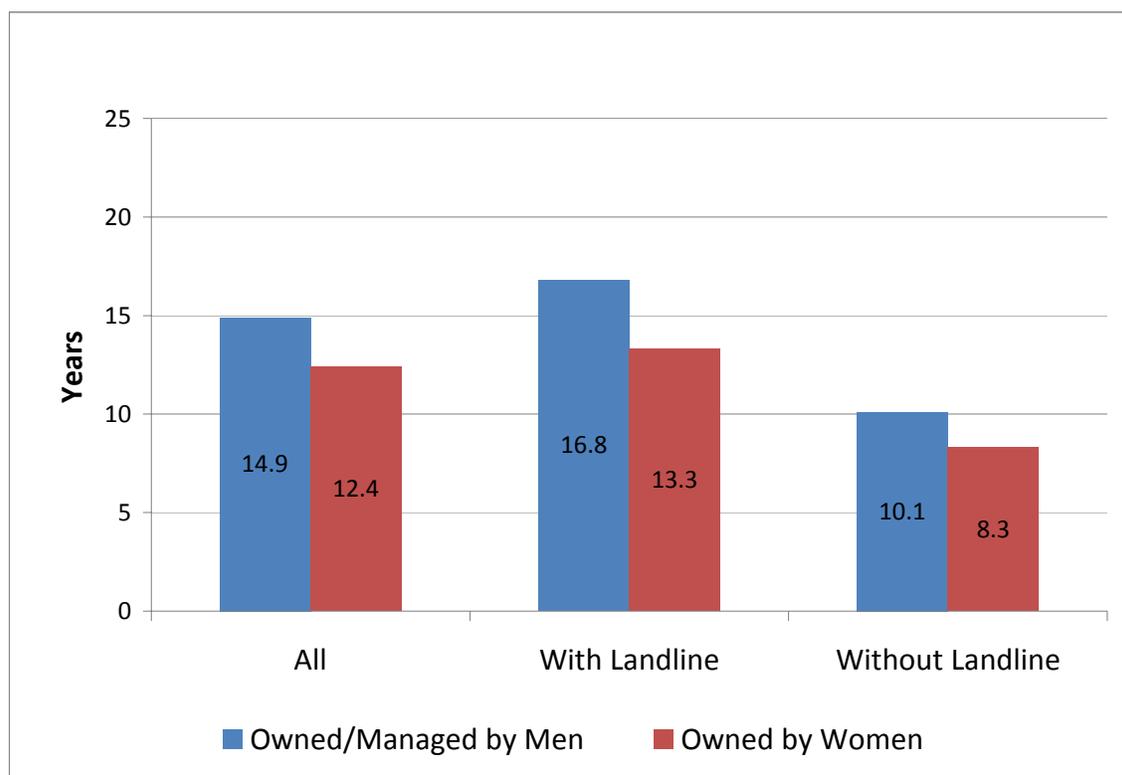
LANDLINE TELEPHONES

The second most highly diffused communication technology was the “old-fashioned” landline telephone. In the context of the urban microenterprises we studied, 73 percent of all businesses owned/managed by men, and 78 percent of those owned by women had traditional landline phones.

In part, this finding might reflect the relative ages of the microenterprises studied. On average, the microenterprises in our sample had been started between twelve and fifteen years ago. However, businesses owned/managed by men but *without* landlines were founded more recently (mean age = 10.1, $SD = 11.5$), while identical microenterprises *with* landlines had been in business for a longer time ($M = 16.8$ years, $SD = 15.6$) (see Figure 4). Similar differences were found for microenterprises owned by women, with non-landline businesses being established more recently ($M = 8.3$ years, $SD = 7.6$) than microenterprises with landlines ($M = 13.3$, $SD = 12.2$).

Indeed, based on our field observations, we would also suggest that newer microenterprises, especially when formed by younger businesspeople, are far more likely to forgo acquiring a landline and to choose to have only a mobile. This interpretation is supported by the official statistics that show a recent, marked decline in landline acquisition concomitant with the recent, skyrocketing mobile diffusion, ably supported by competition-induced tariff reductions (Malik, 2007).

FIGURE 4: Microenterprise Age and Access to Workplace Landlines



It is our impression that many older microenterprises that had acquired their landlines quite some time ago still continue to use them for business purposes, perhaps alone, perhaps in conjunction with a mobile. Since landlines are available only from public sector corporations on a post-paid basis and since subscribers pay a fixed monthly rental charge for which they get some free calls, many microentrepreneurs, we were told, feel obligated to use those free minutes lest they go to waste. Moreover, because of the historically long waiting period to acquire a landline and because of a sense that a landline, however infrequently used, must be maintained in order to perpetuate the business' presence in the business space, most microentrepreneurs appear reluctant to give up their landlines.

Although we do not have any direct evidence about how microentrepreneurs use their landlines for business purposes, we can use data about *mobile phone* use to get some insight about landlines. For example, among all male microentrepreneurs ($N = 329$), some 201 do not use a mobile phone to call their customers. When asked why they do not use their mobile phone, 95 percent of the 201 said they have no need to call customers and the remaining 5 percent called using the business-site landline. Similarly, out of all female microentrepreneurs in the sample ($N = 231$), some 177 do not use their mobile phone to call their customers. Among this group, 98 percent said they have “no need” to call customers by mobile phone and 2 percent call customers using the landline located in

the workplace. In short, landlines are being used to meet business communication needs, but in an extremely limited manner and far less frequently than the mobile phone.⁵

PCS AND LAPTOPS

Physical access to PCs and laptops is, with one potentially important exception, generally limited both at home and at the workplace for both male and female microentrepreneurs. For example, 15 percent of male owners/managers and 17 percent of women owners had a PC at home; while the percentages of laptop ownership are 6 percent and 5 percent, respectively.

Among male entrepreneurs, only 9 percent of the 68 respondents who owned computers at home said they used them for business purposes, while among the 60 women with home computers only 5 percent used them for business. At present, it seems that PCs and laptops at home are used mostly by children or by other family members. It is possible, however, that computers will be introduced into business in the future, since the microentrepreneurs we interviewed were generally not opposed to the general idea of owning a computer. Still, to be effective business tools, home computers must be able to connect to the Internet. Among microentrepreneurs that had a home computer, about half of the computers were Internet-enabled. In addition, across both samples, only 11 percent of all respondents with a laptop also had home Internet access. In sum, given the relatively small installed base of home computers, however, the overall proportion of microentrepreneurs who could go online from home to conduct business was small.

With regard to computers in the workplace, 17 percent of microenterprises owned/managed by men and 10 percent of microenterprises owned by women had job-site computers. Only in microenterprises owned by women was the presence of job-site computers significantly associated with the size of the microenterprise. Although in absolute terms the numbers of computers involved here was small, the size of the microenterprise as measured by the number of employees is statistically related to the presence of a computer (Chi square = 8.7, 2df, sig = 0.013) and this may have some interesting implications. Having a workplace computer increases from 7 percent in female-owned microbusinesses with 1–5 hired workers, to 8 percent in microenterprises with 6–9 hired employees, to a substantial 24 percent in the largest microenterprises we sampled, businesses with from 10–19 hired hands.

This finding implies that women who own the smallest of microenterprises—those businesses with five or fewer employees—see little need for workplace computers. Indeed, this conclusion is consistent with most of the published research on microenterprises, which has generally reported that microentrepreneurs whose businesses are of this scale to see little gain from having a computer. This relative disinterest in the computer apparently even extends to somewhat larger female-owned microenterprises as well, those with up to nine hired workers. Nine or ten employees represent the top of the size range that has generally been investigated by other researchers under the rubric of “microenterprise.” Once again we would like to point out that it is not surprising that

⁵ Similarly, only 9 percent of male owners/managers and an even smaller proportion of women who owned a microenterprise (4 percent) ever used external PCOs or STD booths for business purposes.

researchers using that limited benchmark have reported a general indifference on the part of “microentrepreneurs” to business computers.

However, since this project consciously sought out microenterprises in the 11–19 range of hired workers, we were able to discover that female-owned microenterprises at the top range of hired workers had roughly three times the percentage of workplace computers of smaller female-owned microenterprises. This is a potentially important finding, leading as it does to speculation about the causal relationship between microenterprise growth and having a workplace computer. In contrast our analysis does not show any significant difference between larger and smaller microenterprises with regard to the *number* of work place computers each had.⁶ Two-thirds (65 percent) of female-owned microenterprises with a computer had one work computer, but one-quarter (26 percent) were equipped with two or three computers. What distinguished the largest microenterprises from the smaller businesses was instead simply the presence or absence of a computer.

That a greater percentage of the largest female-owned microenterprises had the highest proportion of business computers is consistent with Duncombe and Heeks (2005), who suggest that microenterprises will use more computers as complexity and volume of work increases. That this phenomenon might be limited to female microentrepreneurs, as our data suggests, is a tantalizing question, since much popular and gender theoretic literature points to the general challenges women face in acquiring technological skills and access to computer technologies. We don’t know a great deal about those issues from data in this study. We do have one piece of compelling evidence however. Almost one-quarter (23 percent) of women who own microenterprises said they had taken some formal computer training. Even though a slightly greater percentage (26 percent) of male microentrepreneurs report formal computer training, we believe that a critical mass of women who own microenterprises have come to see computers and hence computer training as integral to business success. Indeed, this data suggests that some of the women in our study are making an effort to acquire the very skills that will allow them to make greater, more efficient use of a workplace computer.

Since the absolute number of female-owned businesses with workplace computers was quite small ($n = 24$), it is difficult to draw any firm conclusions as to what the computer at work was used for. Still, it is worth reporting that non-zero numbers of female respondents with on-site computers said they used those computers to track supplies and inventory, but not to record information about employees or to monitor cash flow. These findings suggest that levels of numeracy do not by and large affect computer use since all of the activities reported require roughly similar amounts of mathematical skills.

About half (46 percent) of computers in microenterprises owned/managed by men had Internet access, while an even greater proportion (58 percent) of computers in microenterprises owned by women were linked to the Internet. Microenterprise size was not significantly associated with Internet connectivity in either set of microenterprises. When asked why they did not use their work computer to communicate for business purposes, both men and women most commonly responded “No need,” echoing our

⁶Similarly, there appeared to be no important differences related to microenterprise size and when the business computer was acquired.

earlier observation that most customers and suppliers for the microenterprises in our sample were either walk-ins or were contacted by mobile phone.

When asked “Do you ever use a computer at an Internet café for business purposes?” not a single male or female microenterprise owner or manager said, “Yes.” We had anticipated a low usage of Internet cafés by microentrepreneurs for several reasons. The research literature reports that most Internet café use is for game playing, chatting, viewing pornography, or information seeking (Chawla & Behl, 2006; Rangaswamy, 2007a; 2007b), with only anecdotal accounts of business related behaviors (Hussain, 2007; Rangaswamy, 2007c). Moreover, in the case of female microentrepreneurs, many Internet cafés are perceived as inappropriate or even threatening environments for women.

Still, we believed that microentrepreneurs might find Internet cafés useful in meeting business communication needs. To find out more about this, we commissioned a special, non-probability sample of respondents who did indeed access the Internet at Internet cafés. For details on sampling strategy design, see Chapter 2 (Research Methods). Because the data was gathered by a non-probability design and because the number of cases is small ($n_{\text{men}} = 58$, $n_{\text{women}} = 43$), we will discuss the findings only in broadbrush strokes.

Slightly more than half of Internet café goers said that compared to a year ago their attendance at cybercafés had increased, while slightly less than half of the same population said it had declined. Our findings suggest that few go to Internet cafés every day and few go only a day or two a week, with the most frequent level of attendance probably being somewhere in the range of three to five days a week.

THE VALUE CHAIN APPLICATION OF ICTs

The next step in our analysis is to inquire what it is that microentrepreneurs *do* with ICTs, the *motivations* for those behaviors, and in what business context those behaviors occur. Overall, as the narrative below will demonstrate, most microentrepreneurs we studied made only spotty and limited use of the full range of communication opportunities offered by ICTs, even while holding strikingly optimistic attitudes about the utility and other valued consequences of ICT use. Moreover, as we will show in Chapters 4 and 5 of this report, consideration of a microentrepreneur’s full, albeit limited, repertoire of ICT use does show a positive relationship with microenterprise growth, especially when other factors such as gender and motivation are also taken into account.

Our analysis in this section of ICT uses and motivations⁷ is guided by a framework that examines how ICTs transmit and store information and thus might lead to increased productivity or to expanded business products and services (Duncombe & Heeks, 2005, p. 19–20). The Duncombe-Heeks Framework was created to explore the communication needs of those microenterprises with the greatest potential for growth. As Duncombe and

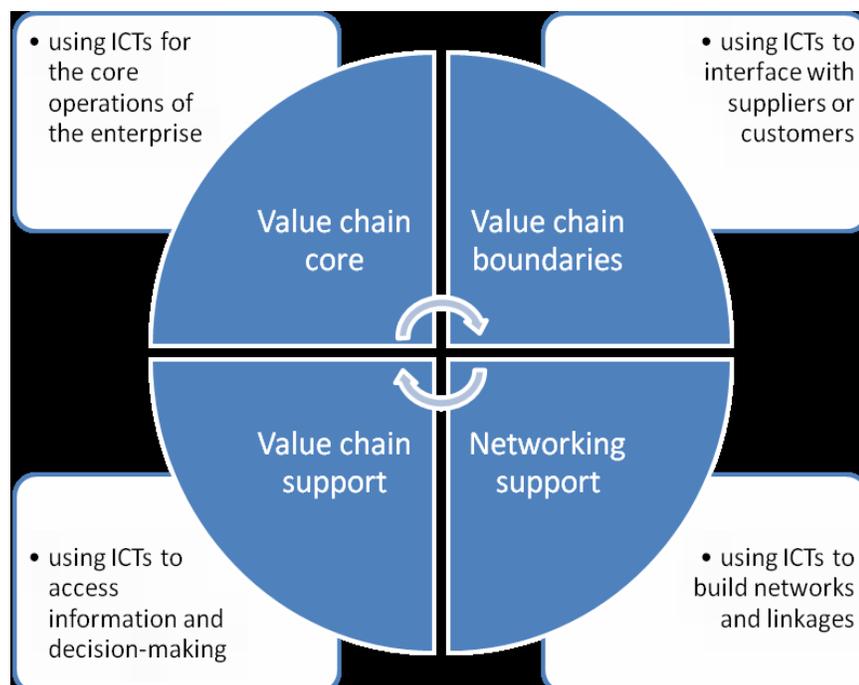
⁷ While the survey questionnaire included sixteen uses and gratifications measures for each communication technology (mobiles, workplace computers, and Internet cafés), statistical analyses revealed only limited underlying motivational patterns or factors. We will, however, report findings based on subsets of the uses and gratifications measures where such data illuminates related findings.

Heeks put it, “Growth, above all else, requires an increased ability to interact with other market actors and institutions” (p. 13). More specifically, growth microenterprises have communication needs arising from four main aspects of their operations: supply, demand, the operating environment, and internal processes. The framework thus describes four possible roles for ICTs in microenterprises:

- **Value chain core:** Using ICTs for the core operations of the business; e.g., keeping track of supplies, inventory, money, etc.
- **Value chain boundaries:** Applying ICTs to contact current customers, new customers, suppliers, etc.
- **Value chain support:** Accessing information about (a) supply and demand and (b) scanning the institutional and regulatory environment.
- **Networking support:** Connecting with social networks and building social capital with other business people.

As the model portrayed in Figure 5 suggests, it is useful for analytical purposes to separate out each of the four ICT roles. But it is also true that any segregation of ICT uses into one of the four categories of role may be somewhat arbitrary. For example, some ICT uses to cross value chain boundaries (e.g., using a mobile phone to call fellow business people in Mumbai) could just as reasonably be classified as a networking support behavior if it led to stronger ties of trust and a growth in social capital. This insight that ICT uses in one role might bear some empirical relationship to ICT uses in another role is further suggested by the arrows in the model and raises the distinct possibility that any given ICT behavior may have multiple uses.

FIGURE 5: Value Chain Roles of ICTs in Microenterprises
(adapted from Duncombe and Heeks, 2005)



VALUE CHAIN CORE

Core activities of microenterprises (and all businesses for that matter) include monitoring flows of supplies, products, and money, as well as keeping track of employees. Among respondents with computers at work, for example, 52 percent of owners/managers used a workplace computer “very often,” “often,” or “sometimes” to track supplies (see Table 4). Among women who owned microenterprises and who had a computer at work, 17 percent tracked supplies on a work computer “often” and 38 percent tracked supplies “sometimes”. A handful of Internet café-going microentrepreneurs reported occasionally going to cyber cafés to keep track of “sales, inventory, costs, or things like that.”

TABLE 4: Use of Workplace Computer for Core Activities

Core Activities	Frequency				
	Very Often	Often	Sometimes	Rarely	Never
To keep track of supplies					
Men (N=46)	2%	17%	33%	0%	48%
Women (N = 24)	0	17	38	0	46
To track inventory					
Men (N = 46)	0	13	33	0	54
Women (N = 24)	0	13	17	0	71
To track money in this business					
Men (N = 45)	0	7	9	0	84
Women (N = 24)	0	0	21	4	75

NOTE: Values may add to > 100% due to rounding.

Almost half (46 percent) of male owners/managers and 30 percent of female owners who had a workplace computer said they used the work computer “often” or “sometimes” to track inventory. However, only 16 percent of male owners/managers reported using it “often” or “sometimes” to track money in the business. Although no female microbusiness owners acknowledged using a business computer “very often” or “often,” 21 percent said they made use of a workplace computer to keep tabs on the flow of money in the microenterprise “sometimes” and 4 percent said they did so “rarely.” Overall, then, women with a workplace computer used it somewhat more frequently than male owners/managers for this key business function. In addition, only one male respondent and one female respondent kept records about their employees on an office computer; and no microentrepreneur in our sample used a workplace computer to email or chat online with employees or to download new computer programs for the business.

Use of a home computer for core business activities was also limited. No women or men interviewed used a computer at home to monitor business supplies “very often” or even “often.” Some 11 percent of male owners/managers with computers at home, but only 3 percent of women with home computers used their home computer “sometimes” to track supplies. Only a handful of male micro business owners and managers with home

computers and no female microentrepreneurs utilized a computer at home to keep records about inventory, and no respondent in either sample ever went online from home to buy something for his or her business.

As to mobile phone use for core business activities, 14 percent of male owners/managers, but only 5 percent of female business people used their mobile to call employees “very often” to “sometimes.” A meager 2 percent of male microenterprise owners/managers and no women ever sent SMS (text) messages to their workers. Both male and female microentrepreneurs felt that there was no need to communicate with the workers, since their employees were present in the workplace and could be communicated with face to face. However, businesses that involved home delivery to the customers did make extensive use of mobile communication with employees. In contrast no female or male microentrepreneur ever used her or his mobile to record information about employees or to manage the business’ money.⁸

Despite these low levels of use, respondents mentioned that their use of mobile phones was motivated at least in part by a sense that mobiles lead to greater efficiency and business-related connectivity. Mobile phones were perceived, for example, as a tool for getting more work done, with 31 percent of male owner/managers and 37 percent of businesswomen agreeing or agreeing strongly with that proposition. Some 40 percent of men who owned or managed microenterprises and 58 percent of female microenterprise owners “agreed” or “strongly agreed” that having a mobile phone allows them to come and go without missing important business phone calls.

Half (50 percent) of male owners/managers and almost as many women (46 percent) “agreed” or “strongly agreed” that accessing the Internet by mobile phone makes it easier to do business. However, since only one man and one woman respondent reported connecting to the Internet for a value chain core activity (emailing employees), we tend to discount this finding and would suggest either that respondents did not fully understand the question or that they were expressing an aspirational rather than an actual use of mobiles.

VALUE CHAIN BOUNDARIES

The need to communicate with individuals and organizations outside of the microenterprise itself creates an opportunity for ICTs to meet that need and thereby facilitate economic development. Depending on the sectoral nature of the business, its size, and the location of its customer base, meeting such communication needs might be as easy as standing in the doorway of the microenterprise chatting with a passerby or as challenging as becoming computer and language literate in order to interact with technologically more advanced businesses and customers. Almost half (47 percent) of male owners/managers and half (50 percent) of women microentrepreneurs with workplace computers send emails to customers from a business computer “often” or “sometimes.”

Internet cafés, too, serve as a means to send business-relevant email. A modest share of microentrepreneurs in the non-probability sample said they often go to cybercafés to e-

⁸ At the time of this study, m-payment and m-banking services were not available in Mumbai.

mail suppliers and customers and a similar proportion of these Internet café-goers use the computers there to chat with customers. In contrast, we found no respondent in either the sample of men or the sample of women who “ever” sent an email from home to suppliers and less than 1 percent of all male owners/managers and only 4 percent of all female microentrepreneurs “ever” emailed customers from a home computer.

With regard to mobile phones, men seem more likely than women to use their mobiles to reach customers. Some 27 percent of male owner/managers call customers by mobile “very often,” “often,” or “sometimes.” In contrast, no women in our sample contacted their customers by mobile “very often” by mobile, while 3 percent said they call customers by mobile “often” and another 8 percent said they reach out to customers on their mobiles “sometimes.” Moreover, only eight men and two women in the entire sample ever sent an SMS text message to a customer; while no men and only two women in the entire sample ever texted suppliers. One possible explanation for this modest use of mobile phones to reach customers stems from the fact that a substantial number of most microenterprise customers may be relatively poor. Thus, it might be considered an inappropriate usurpation of mobile phone minutes to call or text about a business matter, especially if a large proportion of customers are “walk-ins” who might visit the microenterprise on a fairly regular basis anyway.

If actual use of mobiles for cross-boundary communication was not especially high, perceptions about mobile use were often more positive. Here are some examples of what microentrepreneurs think about the role of ICTs in boundary-crossing situations:

- Half (51 percent) of men who own or manage microenterprises and 54 percent of women who own microenterprise “agree” or “strong agree” that “Using my mobile helps me stay in touch with suppliers for this business.”
- Small but possibly significant differences do arise when other motivations for ICT use are considered. For instance, among male owners/managers, 72 percent “agree” or “strongly agree” that their mobile helps them stay in touch with current customers. Among female owners the numbers were lower but still substantial; 58 percent “agree” or “strongly agree.” Some 57 percent of male owners/managers and 49 percent of women “agree” or “strongly agree” that their mobiles help them find new customers—an essential cross-boundary communication task if a microenterprise is to grow.

In general, attitudes do not necessarily lead to behavior, because psychological, social, or cultural variables may intervene. Thus, we interpret this gap between attitude toward ICTs and actual ICT use as a classic example of an attitude-behavior disjunction in which positive attitudes do not necessarily translate into actual behaviors.

VALUE CHAIN SUPPORT

ICTs have the potential to have a positive impact on microenterprises when computers, mobile phones, etc. are used by businesses to acquire the central element for good economic decision-making—information. By using ICTs in an information-seeking mode, microentrepreneurs might, for instance, be able to reduce uncertainties about

markets or about the legal environment—laws and government policies that microenterprises in the informal sector often try to avoid.

Our data present a somewhat confusing picture about the role of computers in information seeking by urban microentrepreneurs. For example, none of the male owners/managers in the probability sample said they ever used a computer at work or at home to browse the Internet for information about prices and other business news, even though, as we noted above, many of those respondents claimed to be active Internet surfers. Similarly, no woman in the probability sample engaged in Internet browsing for such information on her home computer, but 17 percent of women microentrepreneurs reported using a workplace computer to search for business-relevant information “sometimes.” Virtually no user of an Internet café reported going there to search for “information about prices and other business news.” Based on our limited fieldwork and the research literature, we believe that among the impediments to online information-seeking at Internet cafés are a perception that there is no need for the online information, a lack of basic search skills among users, limited relevant content in local languages, and a constant barrage of annoying pop-up advertisements.

On the other hand, 74 percent of men sampled and 60 percent of women microentrepreneurs “agree” or “strongly agree” that their mobile helps keep them informed about prices and other business news. We consider this yet another instance of the attitude-behavior disjunction, since, as we mentioned above, the proportion of microentrepreneurs in our study that reported actually using their mobile to access the Internet is very small.

Thus, we find it somewhat difficult to draw definitive conclusions about the value chain uses of ICTs by microenterprises in this context. Based on the evidence at hand we are inclined to conclude that in general urban microentrepreneurs have little need of mediated information-seeking opportunities and that the role for ICTs in this regard is on balance not especially great.

NETWORKING SUPPORT ACTIVITIES

Social networks, whether ties between family members, friends, or business people, play a significant role in achieving individual or organizational goals. Thus, to the extent that ICTs make it easier or even possible to connect to social networks in the business realm, such communication technologies should be examined for their impact on microenterprises. Email is one way that microentrepreneurs might, for example, tie into business-relevant networks. We found that only 7 percent of male owners/managers and 17 percent of women microenterprise owners in our sample even use a workplace computer as frequently as “sometimes” to email business people in other parts of Mumbai. We further found that only one male owner/manager and one female microenterprise owner in the entire sample ever use a work computer to establish and maintain ties with business people in other parts of India.

Users of Internet cafés on the other hand appear to tell a different story. Almost none went to Internet cafés to email business people in other parts of Mumbai or to chat online with business people in other parts of Mumbai, other parts of India, or outside of India. These behaviors might create enhanced social ties, reduce uncertainty, and generate

trust—all essential ingredients which are required for growing online social capital and for strengthening positive business relationships. However, the data from the special sample of Internet café users shows that only a literal handful of microentrepreneurs apparently ever engage in them.

In contrast, mobile phones seem far more likely to strengthen social and business relationships (See Table 5). Two-thirds (66 percent) of male owners/managers and 65 percent of women who own microenterprises “agree” or “strongly agree” that “Using a mobile helps me stay in touch with others business people who have similar interests and problems like mine.” Mobile phones also add some geographic stretch to the social networks with which the microentrepreneurs might interact. Some 63 percent of male owners/managers and 60 percent of female owners “agree” or “strongly agree” that “Using a mobile makes me feel more connected to businesses in other parts of Mumbai.”

TABLE 5: Perceptions of Mobile Phone Use in Networking Support Activities

Networking Support Activities	Strongly Agree		Neither Agree nor Disagree		Strongly Disagree	
	Agree	Agree	Disagree	Disagree	Disagree	Disagree
Using my mobile makes it easier to stay in touch with my family and friends.						
Men (N = 297)	34%	41%	14%	8%	4%	
Women (N = 203)	29	32	19	12	8	
My mobile helps me stay in touch with other business people who have similar interests and problems like mine.						
Men (N = 297)	26	40	18	11	5	
Women (N = 203)	16	49	17	13	5	
Using a mobile makes me feel more connected with other business people in other parts of Mumbai.						
Men (N = 297)	25	38	16	15	5	
Women (N = 203)	18	42	23	12	5	

NOTE: Values may add to > 100% due to rounding.

ICTs were also valued as a means to access social networks of family and friends, a finding consistent with the “lives and livelihoods” observation (Donner, 2009). Some 39 percent of male owners/managers and 43 percent of female owners with a home computer used it “often” or “sometimes” to send email to family and friends. In what is clearly an effort to maintain and strengthen social ties, 29 percent of men who own microenterprises used their mobile to take pictures of family and friends “often” or “sometimes.” Some 26 percent of male owners/managers and 17 percent of female microentrepreneurs take photos of family and friends on their mobiles “very often,” “often,” or “sometimes.” Finally, three-quarters (75 percent) of all male microbusiness

people surveyed and 61 percent of women who own microenterprises said using their mobile makes it easier to stay in touch with family and friends.

CONCLUSIONS

The *mobile phone*, as expected, is the most widely diffused ICT amongst urban microentrepreneurs in Mumbai. Mobiles are perceived and used by microbusiness people as a modestly to moderately strong utility for crossing boundaries in order to facilitate interpersonal communication with customers and other business people. By plotting mobile phone uses on a vertical axis based on the combined percentage of respondents who use mobiles for a given activity “very often,” “often,” “sometimes,” or “rarely,” we generate a graphic space that makes it possible to compare how common or infrequent mobile uses are. As Figure 6 so clearly demonstrates, the most common use of mobile phones by both male and female microentrepreneurs is not for business but rather is to call family and friends.

Although our study did not explore the possibility in any detail, we know that one quarter (26 percent) of men who manage microenterprises are related to the owner of that business. The percentage of relatives working in female-owned businesses is lower (15 percent). Still, these findings point to the likelihood that phone calls to family might on occasion serve a dual function of maintaining both social and business ties.

Landlines co-exist with the newer ICTs in older enterprises but are generally not found in comparatively newer businesses. Overall, at the moment, compared to mobiles, landlines are in decline as a business communication tool and competition-driven market conditions are speeding the replacement of the landline in favor of the mobile.

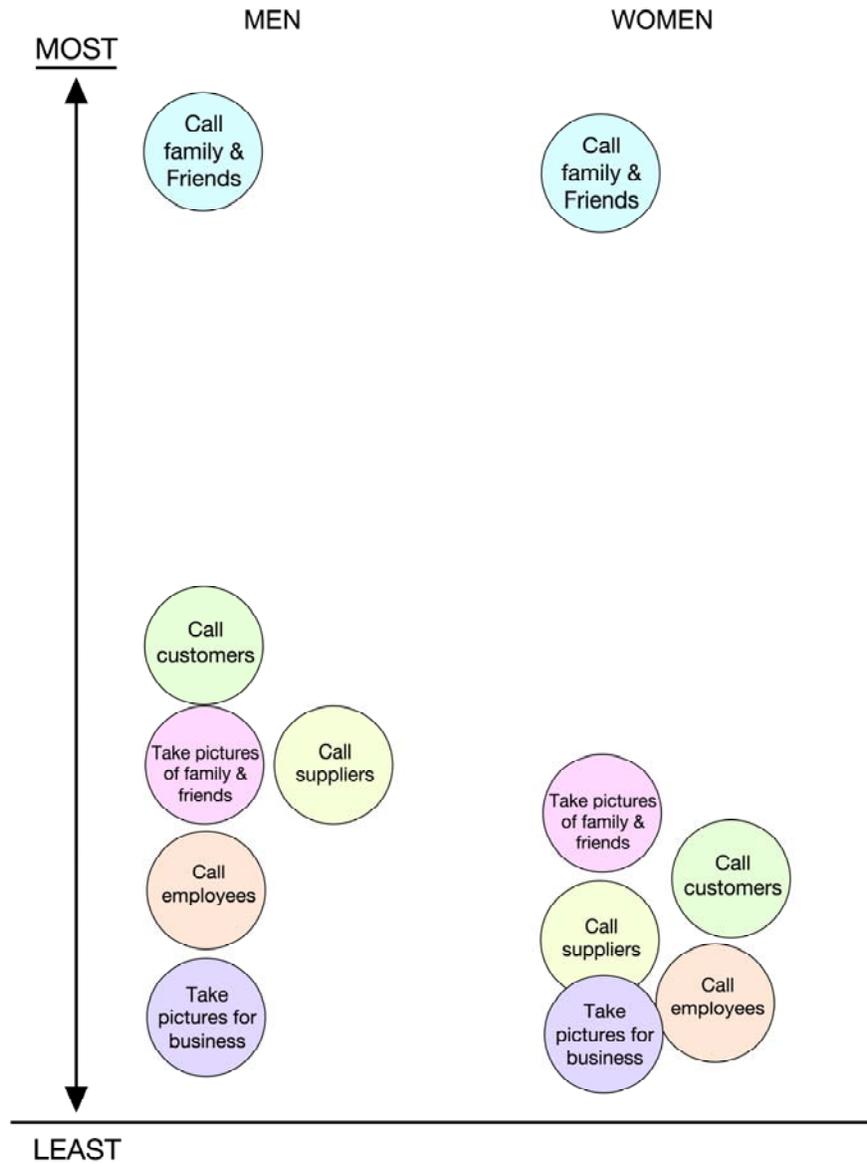
PCs and laptops at home appear to play a very limited business role, first because their raw numbers are not especially large; second, because only small percentages were connected to the Internet; and third, because “home,” we believe, is almost always treated as a personal/family space.

Even though *workplace penetration of computers* is only modest and Internet access for those computers is even smaller, we did nevertheless find limited instances of ICT use for internal core processes, for cross-boundary interpersonal communication with key role partners, and for some information-seeking behaviors. Again, by plotting workplace computer uses on a vertical axis based on the combined percentage of respondents who use computers at work for a given activity “very often,” “often,” “sometimes,” or “rarely,” we generate a graphic space that makes it possible to compare how common or infrequent various uses of business computers are (see Figure 7).

We find that business computers seemed to be far more versatile tools than mobiles, even though most microentrepreneurs were not using their computers to reach out to other microentrepreneurs or to increase their understanding of the larger social, political, and economic environment reported in news and information sites. Since communicating with other microentrepreneurs by computer requires both parties to the communication to have access to a PC, the relatively low penetration rate of computers in the microenterprise community limits such use. Moreover, it appears that the information

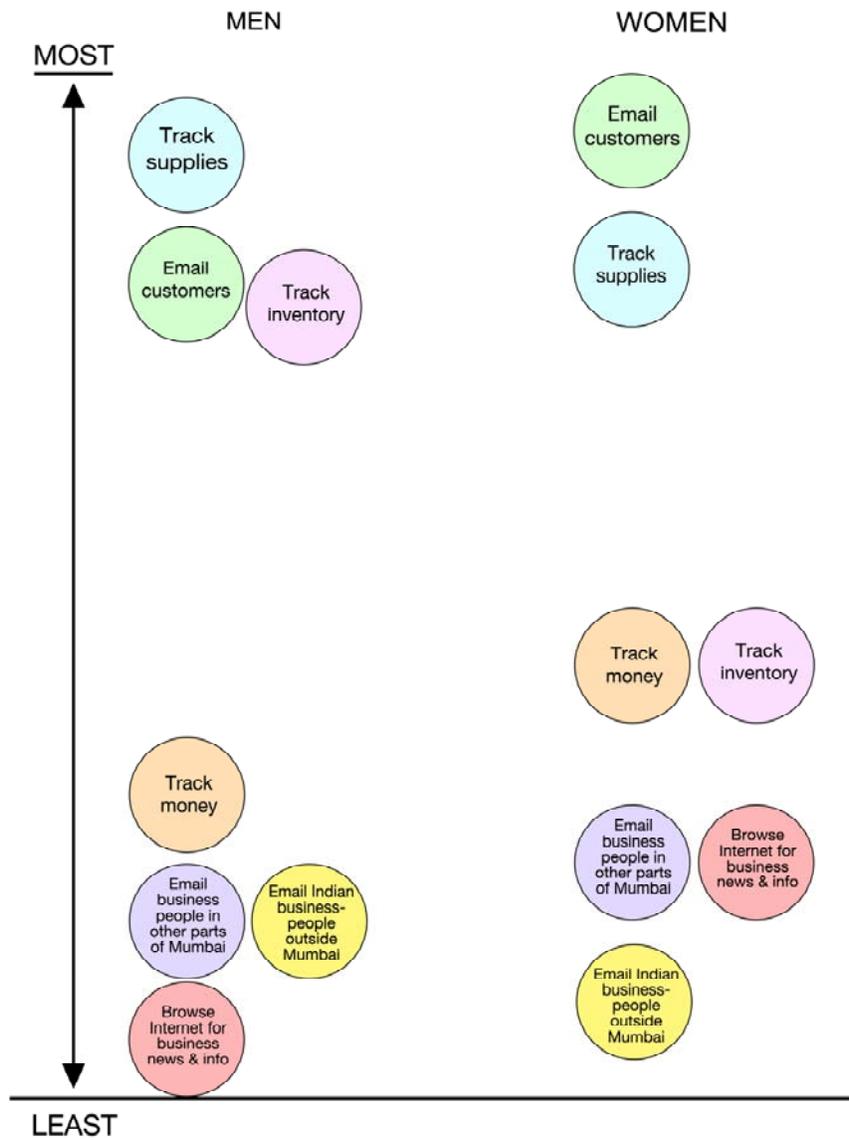
needs of the vast majority of microentrepreneurs in this study can be met through other channels, especially in face-to-face communication or via mobile phone.

FIGURE 6: Common Uses of Mobile Phones



NOTE: Uses are plotted on a vertical axis based on the combined percentage of respondents who use mobiles “very often,” “often,” “sometimes,” or “rarely” for a given activity.

FIGURE 7: Common Uses of Workplace Computers



Note: Uses are plotted on a vertical axis based on the combined percentage of respondents who use business computers "very often," "often," "sometimes," or "rarely" for a given activity.

Based on our observations of the ICT scene, it appears to us that *Internet cafés* may provide both a temporary site for ICT access for younger microentrepreneurs who are first establishing their businesses or for micro businessmen experiencing temporary problems with their existing ICTs, as well as longer term computer access for microentrepreneurs without the capital but with the need for a computer.

Having reviewed current and potential uses of ICT use by urban microentrepreneurs, we would offer these additional conclusions:

All of the communication technologies we investigated are substantially underutilized by the microentrepreneurs we spoke to. The mobile phone, for example, is used primarily as a technology to transmit voice data and, although teenagers around the world might think it is a perfect technology for SMSing, the microentrepreneurs in our study by and large did not. Whether at some point more costly mobiles, say 6,000 INR and up, with Internet accessibility and business-oriented applications will be considered by urban microentrepreneurs to be a worthwhile business purchase remains an open question.

Of course, Internet access is possible using phones worth INR 2,500 as well. But the screen size is small and inadequate image capabilities make them cumbersome to use. The future, then, is with the INR 6,000 phones and for that to happen, finances aside, significant numbers of microentrepreneurs must decide that cross-boundary, value-chain support, and networking support activities made possible by using an upgraded mobile phone are worth the additional expense and time to learn how best to integrate a fairly complex, new communication technology into the work day.

Although conventional wisdom in the technology and development community asserts that within a relatively short, albeit unknown period of time, the mobile phone or mobile device will have largely replaced the computer as the ICT for business-related computing, our study leads us to offer a note of caution. It is certainly possible that within some period of time, say ten years or so, the mobile phone will turn out to be inexpensive enough, with enough local content, and with enough simple interfaces that it could become the tool of choice for microentrepreneurs wishing to communicate with suppliers, customers, other business persons, etc., not just by voice but by SMS or email.

What seems a good deal less likely to us, however, is that these advanced iterations of the mobile phone will see much use as accounting tools. For one thing, mobile phone keyboards are likely to continue to be too tiny for easy entry and manipulation of accounting data. Moreover, microentrepreneurs may not be especially keen to keep business records in any case, because of possible conflicts with tax authorities and other government agencies. Finally, whether 3G and 4G mobiles of the future become the favored technology for information-seeking depends first on overcoming a widespread lack of understanding by microentrepreneurs about the potential value of online information, and second, on microentrepreneurs acquiring the necessary cognitive mappings that will allow them to successfully retrieve information from cyberspace.

Chapter 4: ICTs and Economic Growth

KEY FINDINGS

- One out ten microenterprises had higher income than in the previous year.
- The business sector of microenterprises, services or trade, is related to income growth of microenterprises owned by women.
- Use of one's own mobile phone leads the pack of ICTs among both men and women microentrepreneurs and is linked to the income growth in microenterprises.
- Women-owned microenterprises with growing income appear to be making greater use of the full range of ICTs.
- Though minimally used, utilization of workers' mobile phones for business purposes is linked to income growth among microenterprises owned/managed by men

In this chapter, we will show how mobile phones, PCs, and Internet cafés are related to the stability or growth of urban microenterprises. Using an indicator of income change, we classified the sampled microenterprises into three categories: *growing*, *unchanging*, or *declining*. We attempted to understand whether these three types of microenterprises differ from each other in terms of ICT ownership and usage. We also examined whether background characteristics of the microenterprises or of their owners or managers had any relationship to the income level beyond the impact of the ICTs.

Any complete investigation into microenterprises and development must consider the impact of information and communication technologies on the economic well-being of those very small businesses. Indeed, it is of considerable practical and policy importance that solid empirical evidence be obtained to support or to place nuanced limits on the widely held belief that ICTs can be significant enablers of positive change in the developing world. Although there are adequate insights on positive linkage between telecommunications and economic development, “the broader story of the mobile’s impact (the leader among ICTs in terms of penetration) on small enterprises, farmers, and the self-employed is not as clear-cut” (Donner, 2008, p. 146).

GROWING, UNCHANGING, OR DECLINING MICROENTERPRISES

We identified the growth of microenterprises in two ways. First, the microentrepreneurs were asked whether, compared to “a year ago,” the annual income of the business had increased, decreased, or stayed about the same. Respondents were then asked to estimate the percentage change, if any. Second, the microentrepreneurs we interviewed were asked whether, “compared to a year ago,” the number of hired workers in the business had increased, decreased, or stayed about the same; and, if the number had changed, by how many. Our working assumption was that increased income levels and an increased number of hired workers were indicators of microenterprise growth. Since the fieldwork was carried out after the Mumbai terror attacks that commenced on November 26, 2008, we also asked our respondents about the impact, if any, of the attacks on their businesses in terms of income and number of hired workers.

Among male owners/managers, a small number (12 percent) reported that their business had greater income compared to a year before. We classified those businesses as *growing microenterprises*. Although growing microenterprises reported increased income, the actual change among male owned/managed businesses was modest, with a median⁹ increase of only 10 percent ($SD = 16$) and a range 5 to 65 percent. Similarly, 12 percent of microenterprises owned by women also experienced income growth with a median year-over-year income increase also of 10 percent ($SD = 13$) with a range of 3 to 50 percent.

However, the largest number of microenterprises in our study reported their income to be the same as it was a year before. We call those business “unchanging microenterprises” and note that 57 percent of male owned/managed businesses and 52 percent of female-owned businesses fell into the unchanging category.

Further, for analytical purposes we defined *declining microenterprises* as those whose income decreased compared to the previous year. A slightly greater percentage of businesses owned by women (36 percent) were classified as declining microenterprises, compared to the 31 percent owned/managed by men. However, the declining businesses owned/managed by men lost more money year over year ($Median = 25$ percent, $SD = 17.1$) with a range of 5 to 75 percent, compared to declining microenterprises owned by women where, compared to a year earlier, business income declined at a median value of 20 percent ($SD = 16.5$), with range of 5 to 75 percent. (The composition of microenterprises on the basis of income change is presented in Table 6.) Finally, in the *exploratory sample*, a moderately large proportion of microenterprises said income had increased, an overwhelming majority reported no income change from the previous year and only a handful reported negative income growth.

TABLE 6. Composition of Microenterprises based on Income Change

Nature of Enterprises	Male Owned/Managed	Female Owned
Growing	12%	12%
Unchanging	57%	52%
Declining	31%	36%

When we asked men who owned or managed microenterprises about the reasons for changes in business income, 45 percent said they had “no idea” or gave closely related responses. Some 22 percent attributed the decline to the global market recession. Thirty percent of female entrepreneurs also had limited explanations for

changes in their business’ income, offering responses that we coded as “no reason” or “no idea.” Some 19 percent of women who owned microenterprises responded that there is “less business” or offered closely related answers. Only a few of the men and women

⁹ In this chapter we will most often use median values rather than arithmetic means as in other chapters. Analysis in this chapter focuses on disaggregated subgroups (growing, unchanging, and declining microenterprises) whose values on various variables are heterogeneous or scattered and come from uneven sample distributions. In these circumstances, it is more appropriate to report median values rather than means.

we interviewed cited contextual reasons like “the mill got closed,” “there are more shopping malls,” or “wholesale markets have come.” This finding of overall ignorance about how the market system works is consistent with earlier research among microentrepreneurs in urban Africa (Roy and Wheeler, 2006) and suggests that in urban Asia, too, inadequate knowledge about the market might inhibit business growth.

INCOME CHANGE AND EMPLOYMENT GENERATION

In terms of creating jobs, female microentrepreneurs did better than their male counterparts. In 13 percent of all female-owned microenterprises ($Median_{jobs\ added} = 2$, $SD = 1.1$) women added more jobs, while only 1 percent of all male owners/managers said their business had added workers. Some 88 percent of male owners-managers and 52 percent of female microentrepreneurs had not added or let go any hired workers. However, compared to “last year,” the number of hired workers fell in 35 percent of microenterprises owned by women, while in businesses owned/managed by men the comparable number was only 11 percent. The median decrease in the actual number of hired employees was two for both microenterprises owned/managed by men ($SD = 8$) and those owned by women ($SD = 1.2$). When asked about the reasons for change in number of hired workers, 43 percent of men said business growth had not be strong enough to hire more workers (“not required”) and 41 percent said they had no explanation. Similarly, one-third (34 percent) of women entrepreneurs did not have any reasons for the changing number of employees in their microenterprise and 10 percent said business had declined so they needed fewer hired workers.

Compared to microenterprises owned/managed by men, businesses owned by women appear to be more volatile in terms of hiring and firing. Women generate more jobs, but at the same time shed more hired workers than men. Among the growing microenterprises, 77 per cent of female microenterprise owners noted that workers were hired due to an increase in business. In a similar way, 71 percent of female microentrepreneurs who owned declining microenterprises reported having reduced the number of their hired workers because they were doing “less business.”

Income growth and the number of hired workers that a microenterprise employs were strongly and positively correlated. This relationship was just about the same for both microenterprises owned/managed by men (Correlation Coefficient = 0.315, $p < .01$, 2-tailed) and those owned by women (Correlation Coefficient = 0.378, $p < .01$, 2-tailed). However, given that our data represents just one point in time, it is not possible to speak with any certainty about the direction of causality between income growth and number of hired workers. Without longitudinal data, it is equally plausible that higher business income allows the microentrepreneur to hire more workers as it is to argue that by hiring more workers the microentrepreneur is able to increase the income of her or his business.

We next grouped the microenterprises on the basis of change in number of hired workers. Businesses that had increased the number of paid employees compared to a year earlier were labeled “growing2”, while microenterprises with fewer hired workers were classified as “declining2,” while those very small businesses in which the number of paid workers remained the same were grouped as “unchanging2.” We found that the

relationship between income and hired workers was significant across the samples of men (Pearson Chi-square = 87.56, $p < .01$, 2-tailed) and of women (Pearson Chi-square = 68.20, $p < .001$, 2-tailed).

Among women-owned, growing microenterprises, 31 percent had hired more workers compared to a year previously, while two-thirds (66 percent) continued with the same number of employees. Only a very small proportion (3 percent) had decreased the number of their hired workers. Only 10 percent of growing microenterprises owned/managed by men added workers, but that was one-third the rate in female-owned businesses. Most microenterprises (88 percent) owned/managed by men were operating with the same number of hired workers as a year earlier, but, as was the case with female-owned businesses, only 3 percent had a diminished worker staff (see Table 7).

TABLE 7: Cross Tabulation of Hired Workers and Income Change Categories for Microenterprises

Change in Income	Change in Number of Hired Workers (%)			Total	X2
	Declining	Unchanging	Growing		
Microenterprises owned/managed by men					
Declining	31	69	0	100	87.56*
Unchanging	2	98	0	188	
Growing	2	88	10.0	40	
Microenterprises owned by women					
Declining	25	72	3	81	68.20**
Unchanging	2	96	2	119	
Growing	3	66	31	29	

* $p < .01$

** $p < .001$

We found that income growth in microenterprises owned by women generated more jobs than similar income growth in microenterprises owned/managed by men. Even in declining businesses, female owners were slightly less likely than male owner-managers to dismiss hired workers and in fact, in 3 percent of declining microenterprises owned by women (but in no businesses owned/managed by men) the number of hired workers actually increased.

Female-owned microenterprises were not affected by the terrorist attacks on Mumbai. Some 62 percent of the growing enterprises owned by women actually reported doing more business after the terrorist attacks. Almost all female-owned, unchanging microenterprises remained at the same level of income, while 78 percent of declining microenterprises owned by women were doing less business compared to before the terrorist attacks. Microenterprises owned/managed by men exhibited a similar overall pattern. Some 40 percent of growing microenterprises owned/managed by men did more business (see Table B.4 in Appendix B). More than three quarters of both unchanging and declining enterprises followed a similar pattern in their income change when compared to

before the terrorist attacks. These findings are generally consistent with earlier research (Panagariya, 2008) that found terror strikes to be of only limited impact on Mumbai businesses.

MICROENTERPRISES CHARACTERISTICS AND GROWTH

Although this project has focused primarily on patterns of ICT ownership and use, it is also clear that the characteristics of the urban microenterprises might also have a relationship to the success of these very small businesses. In the sample made up exclusively of men, we had two kinds of respondents, owners of microenterprises and managers of microenterprises. Whether owners or managers might work harder and thereby produce larger profits for the business seemed at the outset of our research to be an open question, best tested with empirical data. Based on our survey findings, we conclude that income growth does not appear to depend on whether the microenterprise is run by owners or by managers. For example, 60 percent of growing microenterprises were run by managers compared to approximately equal proportions of declining and unchanging microenterprises (57 percent).

Growing microenterprises owned by women had not been in business all that long. The median “age” of female-owned, growing microenterprises was five years ($SD = 7.22$), compared to the overall sample of female-owned businesses, for which the median was nine years ($SD = 12$). Microenterprises owned/managed by men had a median age of ten years ($SD = 15.75$). Though the age of the enterprises was not significantly related to income change, there might be a possibility that women started their businesses when a particular service or trade was in demand and those microenterprises were still benefiting from a continuing demand in the market.

As we noted earlier (see Chapter 2), only 2 percent of the businesses owned by women and 3 percent of the microenterprises owned/managed by men came from the manufacturing sector. Half (50 percent) of growing microenterprises owned/managed by men was providers of services, followed by 48 percent in trade-related activities. Among declining microenterprises owned or managed by men, trade dominated at 60 percent, followed by microenterprises in the service sector (34 percent). A similar trend was found among the unchanging microenterprises owned/managed by men, with 59 percent businesses in trade and 39 percent in the service sector (see Table 8).

Among the growing businesses owned by women, the greatest proportion (57 percent) was in the service sector, followed by microenterprises in trade (43 percent). As was the case with men, trade clearly dominated in the declining microenterprises owned by women, with 68 percent of declining microenterprises coming from the trade sector. Trade and services domains are approximately equally represented among the unchanging microenterprises owned by women.

Among microenterprises owned/managed by men, there was no significant relationship between the sectorial nature of the business and the change in income, unlike among the female microentrepreneurs (Pearson Chi-square = 17.35, $p < .05$, 2-tailed). Female-owned microenterprises in the service sector tended to be more stable, not losing much year-over-year income.

TABLE 8: Cross Tabulation of Nature of Business and Income Change Categories for Microenterprises Owned by Women

Change in Income	Nature of Business (%)			Total	χ ²
	Manufacturing	Services	Trade		
Declining	4.8	27.7	67.5	83	17.35*
Unchanging	0	49.2	50.8	118	
Growing	0	57.1	42.9	28	

* p<0.01

A one-way between subjects ANOVA was conducted to compare the effect of industry sectors on income change in manufacturing, services, and trade conditions. There was a significant effect of industry types on income change at the $p < .05$ level for the three conditions [F (2, 226) = 4.318, $p = 0.014$]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the manufacturing ($M = -30$, $SD = 23.452$) was significantly different from the services ($M = -4.64$, $SD = 18.502$) and trade ($M = -7.48$, $SD = 16.6$). However, services did not differ from the trade conditions. Taken together, these results suggest that women-owned microenterprises tend to lose more business when engaged in manufacturing, but services and trade sector microenterprises owned by women were positively related to income growth.

Growing microenterprises—both those owned by women and those owned or managed by men—appeared to benefit at roughly the same level from walk-in customers. Some 95 percent of men connected to growing microenterprises reported having walk-in customers and 100 percent of female owners of growing businesses reported a similar customer base. This is not surprising given that most of these microenterprises are in the trade or service sector, where face-to-face interaction with customers is common. It also raises the question whether ICTs might be of limited utility for those microenterprises with substantial numbers of walk-in customers.

When it comes to serving customers from other parts of Mumbai, growing microenterprises owned/managed by men had a slightly higher proportion (58 percent) compared to women (41 percent). Similarly, female microentrepreneurs from growing businesses were less likely than male microentrepreneurs to have customers from outside Mumbai. Only 3 percent of women who own growing businesses reported having such customers, while 20 percent of men who owned or managed growing microenterprises reported having these customers-at-a-distance. Men whose microenterprises were growing also tended to acquire customers by using their mobile in a slightly higher proportion (28 percent) than women (21 percent). Among unchanging microenterprises, businesses owned and/or run by men and those owned by women have approximately similar percentages of walk-in customers and customers that are contacted by mobile phone. Microenterprises in decline also have substantial numbers of customers from other part of Mumbai. More than two-thirds (69 percent) of women businesspersons in declining microenterprises said they had customers from outside their immediate

neighborhood (see Table B.5 in Appendix B), compared to 43 percent of male owner-managers.

When customers are not from the immediate vicinity, there may be a need sometimes for microentrepreneurs to pay personal visits to them. Indeed, earlier research has shown that small businesses depend on direct personal contacts to strengthen business-related ties (Molony, 2006). Given cultural norms about literally the proper “place” for women, business travel might be more difficult for female microentrepreneurs and they might not be exploiting the full potential of ICTs to compensate for the absence of face-to-face meetings.

The relationship between the nature of customers and growth in income was significant in two situations. First, among female microentrepreneurs, income appeared to increase as the proportion of customers from other parts of Mumbai decreased (Chi square = 6.8, $p < .05$, two-sided). Secondly, among microenterprises owned/managed by men, income appeared to increase with increased numbers of customers from outside Mumbai (Chi square = 6.3, $p < .05$, two-sided). Growing enterprises owned/managed by men had a greater number of customers coming from outside Mumbai (20 percent), contrasted with similar, but declining, microenterprises (13 percent) (see Table B.6 in Appendix B). There are at least two possible reasons for this: (1) Men might be offering high-quality services and goods to customers who are from outside Mumbai, resulting in increased microenterprise income or (2) as mentioned earlier, for small businesses personal meetings are important in sustaining the business ties, which can be done more freely by men.

THE CONSEQUENCES OF MICROENTERPRISE FORMALITY

Although there is no consensus in the scholarly literature (Farrell, 2004; Esseelaar et al., 2006; La Porta & Shleifer, 2008; Gelb, Mengistae, Ramachandran, & Shah, 2009) whether formal status of a microenterprise is related to the income growth, there is sufficient support for the idea that we decided to test it in our study. Formality was operationalized by asking whether the microenterprise was registered with the government, whether it had a bank account, and what kind of bookkeeping was employed. We will discuss the items separately first.

Among male-owned/managed microenterprises, 54 percent of growing businesses were registered with the government. In contrast, only 38 percent of growing microenterprises owned by women were similarly registered.

The proportions of registered microenterprises by gender are reversed when unchanging and declining businesses are considered. Some 37 percent of unchanging microenterprises owned/managed by men were registered with the government, compared to half of similar businesses owned by women. In addition, only 31 percent of declining microenterprises owned/managed by men were registered with the government, while more (56 percent) declining micro-businesses owned by women were registered (see Table 9). For both women and men, the relationship between income change and registration was significant, albeit with contradictory directions. Among men, growing microenterprises were more likely to be registered with the government (Chi square =

6.2, $p < .05$, two-sided), whereas among women, more declining enterprises had registration with the government (Chi square = 10.00, $p < 0.01$, two-sided).

Gender differences are especially evident in the linkage between mobile use and registration with the government. We created a composite index of mobile use that includes how frequently mobile phones are used to call employees, customers, and suppliers. The Cronbach's alpha for this index among both men and women sampled was 0.62. A comparison of microenterprises that were registered with the government and those that were not showed that among men, usage of mobile phones was likely to be higher in microenterprises that were not registered ($t = 3.38$, $p < 0.001$), while for women, there was no significant relationship between the registration and the mobile use.

TABLE 9: Cross-Tabulation of Registration with Government and Income Change Categories for Microenterprises

Change in Income	Registration with Government (%)		Total	χ^2
	Yes	No		
Microenterprises owned/managed by men				
Declining	31	69	100	6.26*
Unchanging	37	63	188	
Growing	54	46	39	
Microenterprises owned by women				
Declining	68	32	83	10.0**
Unchanging	50	50	119	
Growing	38	62	29	

* $p < .05$
 ** $p < .01$

Growing microenterprises owned/managed by men had been registered with the government for a decade or so (*Median* = 10, *SD* = 18) which was identical to the length of registration found in unchanging microenterprises (*SD* = 15). Declining microenterprises had registered with the government relatively more recently, with a median value of 6.5 years (*SD* = 17). Women microentrepreneurs held comparatively older government registrations. Growing microenterprises owned by women had been registered longer than growth businesses owned/managed by men (*Median* = 16; *SD* = 12). However, the length of time a business had been registered with the government was not significantly associated

with income growth, from which we infer that having a government registration at all matters more than how long that registration has been in place.

As a next level of formality, we tried to understand whether the presence of bank accounts in the name of the business is related to income growth. Holding a bank account is an indicator that microenterprises are interested in extending the formality quotient by making business transactions more transparent. Also, having a bank account might make it possible to obtain additional capital if desired through loans—another potential signal of business growth. More than half (60 percent) of growing businesses owned/managed by men had bank accounts, compared to 65 percent of growing microenterprises owned by women. Among men, similar proportions of declining and unchanging microenterprises held bank accounts (59 percent and 56 percent, respectively).

Although differences across the three income categories are more pronounced in microenterprises owned by women, with 59 percent of declining and 49 percent of

unchanging microenterprises having bank accounts, the relationship between bank account holding and positive income change was not statistically significant. This finding raises the possibility that income growth in microenterprises is linked to early stages of the formality, registration with the government. We believe that incremental growth of the microenterprises will lead to opening bank accounts, which will be part of further growth plans.

Extending this line of inquiry, we then we created a formality index that is composed of items that measured whether the business was registered with the government, whether it had a business bank account, and what bookkeeping practices the business followed, and tried to find the linkage between the index of business growth (composed of change in income when compared to last year and change in income after the terror attacks) and total ICT access (see the next section). Again, gender differences were present. Among women, formality was negatively linked to business growth and positively linked with the total ICT access, whereas in a similar analysis among men, formality was positively linked with the total ICT access and was not related to the business growth (see Chapter 5 for further details).

These findings offer new, albeit limited, insights into gender-based differences between income growth, business formality, and the use of ICTs. The linkage between gender, formality, and business growth is worth exploration in future research. It would be theoretically significant and policy relevant to know why female-owned enterprises are not growing when they are formal, unlike those owned/managed by men, and whether usage of mobile phones in particular and use of all ICTs in general is mediating the linkage between registration and the nature of business growth.

ICT OWNERSHIP AND USE

We captured microentrepreneur ownership and use of ICTs through 23 questionnaire items for men and 21 items for women.¹⁰ All items were scored either 1 or 0.5. A value of 0.5 was given to ownership or use that was based on shared access, such having a home computer or laptop that was also used for business purposes or borrowing a friend's mobile phone to make business calls. Individual scores were summed into an overall ICT access score (TIA), where the maximum possible TIA score for men was 18 and for women, 16.

For men, TIA score did not vary significantly across the three income-based categories of microenterprises. Growing microenterprises owned/managed by men had the highest scores with a median of 2.25 ($SD = 1.6$). However, declining microenterprises ($Median = 2$, $SD = 1.7$) and unchanging businesses ($Median = 2$, $SD = 1.3$) were not far behind. Of greater significance is the finding that, using this approach, there was no significant relationship between income change and TIA. We don't believe, however, that this null finding is the final word on the relationship between ICT use and business growth in microenterprises owned/managed by men. Additional consideration of this central issue of our research follows immediately below and also can be found in Chapter 5.

¹⁰ Since data was collected only from female owners of microenterprises, there was no need for items in that sample relating to ownership and use of ICTs by managers.

In contrast, female microentrepreneurs appeared to benefit from ICT use. While median values of the TIA were similar across the three categories of microenterprises—the value for growing microenterprises was 1.07 ($SD = 0.04$), for unchanging enterprises 1.04 ($SD = 0.04$), and for declining microenterprises 1.04 ($SD = 0.03$)—there was also a positive, significant relationship with income change.

A one-way between subjects ANOVA was conducted to compare the differences between growing, unchanging, and declining microenterprises owned by women on the total ICT access score. We found a significant difference across the three types at the $<.05$ level [$F(2, 228) = 3.005, p = 0.05$]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the growing enterprises ($M = 2.93, SD = 1.57$) was significantly different from the unchanging enterprises ($M = 2.2, SD = 1.5$). However, declining microenterprises ($M = 2.2, SD = 2.20$) did not differ from the other two types. In short, then, when female business people use multiple ICTs, it leads to higher income for their microenterprises.

Looking at one specific kind of ICT, the mobile phone, the data showed that among the male microentrepreneurs, the incidence of mobile phone ownership was higher (100 percent) for the growing microenterprises (see Table B.7 in Appendix B), compared to declining microenterprises (88 percent) and unchanging businesses (89 percent). A similar trend was evident among the female microentrepreneurs as 97 percent of the owners of growing microenterprises had mobiles, followed by 94 percent for declining businesses and 83 percent for unchanging businesses (see Table B.8 in Appendix B).

For men, the relationship between mobile ownership and the three categories of business change was weak (Pearson Chi-square = 5.062, $p = 0.08$, 2-tailed) with only a slight difference between unchanging and declining microenterprises. However, this weakness was replaced by a significant relationship (Pearson Chi-square = 4.925, $p < .05$, 2-tailed), once we club the microentrepreneurs into two types: (1) growing and (2) declining/unchanging microenterprises as a pooled group. A similar relationship was found for the female microentrepreneurs. Income change and mobile ownership were positively and significantly associated (Pearson Chi-square = 9.472, $p < .01$, 2-tailed). As this procedure suggests, compared to all other kinds of very small businesses, microenterprises whose income was growing were also more likely to own a mobile phone. This finding clearly raises the possibility that ownership mobiles might make a significance difference to the growth potential of the microenterprises.

THE IMPACT OF MOBILE USAGE

Contrary to the negative findings above based on the total ICT access index, the results here provide clear support to the idea that, of all ICTs, the mobile phone apparently does have a positive impact on microenterprise income. These results are consistent with the recent broader research (Vodafone, 2009) showing that poor households in urban places in India increased the value of their economic activity, labor, or self employment by using mobile phones. Also, Donner (2004) reported that mobile phones represent an important tool for income growth for urban microentrepreneurs in Rwanda, a finding that was replicated subsequently among Indian urban small business owners as well (Donner, 2007).

Among the sample of male owners-managers, a one-way between subjects ANOVA was conducted to compare how microentrepreneurs with very small businesses in different income change categories varied in their use of mobiles to call customers. We found a significant effect of mobile use on income change at the $p < .05$ level [$F(2,293) = 3.11, p = 0.046$]. Post hoc comparisons using the Tukey HSD test indicated that growing enterprises used mobiles more often ($M = 2.1, SD = 1.32$) and were significantly different from declining microenterprises ($M = 1.68, SD = 1.08$). These results suggest that growing microenterprises owned/managed by men tend to call customers using mobile phones more than other similarly owned or managed businesses. In other words, income growth of the microenterprises was related to frequent use of mobile phones to call customers. We found similar results among the women entrepreneurs with significant differences in calling customer through mobile phones across income levels at the $p < .05$ [$F(2,200) = 4.4, p = 0.014$]. Post hoc comparisons showed that growing enterprises used the mobile phones more often ($M = 1.64, SD = 0.95$) than declining enterprises ($M = 1.24, SD = 0.74$).

Diffusion of mobile phones among hired workers was high. Across all the microenterprises examined, half or more had hired workers who owned their own mobile phones. In growing microenterprises owned/managed by men, 78 percent had employees with mobile phones and an even greater proportion of very small businesses owned by women (83 percent) had hired workers with mobiles. However, income of the microenterprises was not related to mobile ownership by workers.

Given the substantial penetration of mobiles among microenterprise employees, we then tried to understand whether the income of the microenterprises changed if owners or managers borrowed the mobile phones of their employees for business purposes. If, for example, microentrepreneurs were able to utilize existing ICT infrastructure (in this case, workers' mobiles), this might potentially be a path to greater business efficiency and expanded social networks that did not involve capital outlay for hardware. In 36 percent of growing businesses owned/managed by men, owners/managers used their employees' mobiles, compared to only 22 percent of women who owned microenterprises. Use of workers' mobile phones among the unchanging microenterprises was higher for female microentrepreneurs, 56 percent, compared 30 percent for men; in declining microenterprises 16 percent of male owners/managers but only 5 percent of women owners reporting borrowing worker mobiles.¹¹ These findings point to a small but non-trivial role for the borrowed mobile phone in generating additional business income.

COMPUTERS AND MICROENTERPRISE GROWTH

Turning now to business use of computers, we found that growing microenterprises were comparatively more likely to have workplace computers. Among the male microentrepreneurs, 18 percent of growing businesses used computers at work, compared to 14 percent of unchanging microenterprises and 15 percent of declining businesses. Few businesses owned by women had workplace computers, with only 10 percent of

¹¹ We also found a weak correlation between those relatively infrequent occasions when workers used their personal mobile phone for business purposes and business income (Pearson Correlation= 0.18, $p < .05$, two-tailed).

growing businesses, 13 percent of declining businesses, and 8 percent of unchanging microenterprises so equipped. However, in both the sample of women and of men, income growth was unrelated to ownership of a workplace computer, suggesting that computers by and large have little positive impact on microenterprise well-being.

Years of using computers at work was significantly related to years of using a computer at home. Men who used a workplace computer were most likely to use a computer at home as well (Pearson Correlation 0.479, $p < .05$, two-tailed). Moreover, the number of years that male owners/managers used a home computer was significantly related to income growth in their business. Male owners/managers from growing enterprises tended to use computers at home the most. They had been using computers for a median of six years ($SD = 5.3$), compared to a median of two years ($SD = 2.5$) for men from both unchanging ($SD = 2.5$) and declining ($SD = 2.4$) microenterprises.

A one-way between subjects ANOVA was conducted to compare the differences between the three types of microenterprises on years of using a home computer. There was a significant difference across the three types [$F(2, 45) = 3.540$, $p = 0.037$]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the growing enterprises ($M = 6.19$ years, $SD = 5.3$) was significantly different from the score of the declining enterprises ($M = 2.6$ years, $SD = 2.45$). However, unchanging microenterprises did not differ from others ($M = 3.3$ years, $SD = 2.54$). In other words, years of use of home computers were associated with income growth in urban microenterprises owned/managed by men.

Using a computer at home might be thought of as an initial phase of diffusion. Microentrepreneurs have PCs or laptops at home largely to email family and friends, to play games, or for their children. However, it is possible that as microentrepreneurs become more computer literate they might realize that a computer is potentially a useful business tool, at which point home-use might spill over to the workplace. For female microentrepreneurs, years of using a computer at home were independent of the years of computer use at work and business income appeared to be unrelated to the presence and use of home computers. Understanding this gender-based difference will require further research.

RESULTS FROM THE EXPLORATORY SAMPLE

As explained in Chapter 3, use of the Internet for business was very limited and use of Internet café was nil in the samples of both men and women. Thus we must depend solely on the exploratory sample for understanding the association between income change and Internet use. In the exploratory sample, almost three-fourths of microentrepreneurs in growing enterprises used the Internet at work. About half of the women and men in unchanging microenterprises and more than three-fourths of those in declining businesses also used the Internet at work. In contrast, even in the exploratory sample overall use of Internet cafés was minimal. Only one-tenth of microentrepreneurs in growing businesses reported using the cafés. Counter-intuitively, use of cybercafés was greater—slightly more than one quarter—among business people from both the unchanging and declining microenterprises.

Business people from growing microenterprises had been using Internet at work for a median of three years ($SD = 2.1$) which is slightly more than in unchanging businesses, *Median* = 2 years ($SD = 1.3$). Years of Internet café use were the same for growing and declining microenterprises, with a median of 2 years with standard deviations of 1.1 and 2.1, respectively. In both the cases, use of Internet was not associated with the microenterprise income, suggesting that the Internet is not currently a core tool for many urban microentrepreneurs.

MICROENTREPRENEURS' CHARACTERISTICS AND INCOME GROWTH

Having examined the relationship between income growth, microenterprise characteristics, and ICT ownership, we will now consider whether positive income change is related to the personal characteristics of the microentrepreneurs.

Microentrepreneur age does not appear to be a factor that distinguishes the three types of businesses we examined. The men who own/manage growing microenterprises have a median age of 32.5 years ($SD = 9.7$), for unchanging microenterprises the owner-managers had a median age of 35 ($SD = 10$) and the median age for male owner-managers of declining microenterprises was also 32.5 ($SD = 10.5$). Similarly, the median age of a female owner of a growth, unchanging, or declining microenterprise was 35 years old. In the exploratory sample, overall age composition was younger. However, there was no relationship between age of owners or managers and income growth in all sample sets: men, women and exploratory. This finding raises the possibility that workplace experience in and of itself is not sufficient to turn a business into a growth microenterprise or to keep an ongoing business from declining.

Mumbai is a city of migrants where the ability of microentrepreneurs to communicate with customers and business associates may be related to the income growth. We asked the microentrepreneurs about their language abilities, specifically their ability to speak, read, and write in three languages — Hindi, Marathi, and English.

Among men, Hindi language abilities were almost universal, with close to 100 percent of male respondents able to speak, read, or write Hindi. Across all types of microenterprises, more than three-quarters of male owners/managers could speak, read, and write Marathi. Among female microentrepreneurs, ability to speak, read and write in Hindi was 100 percent. Approximately 80 percent of female owners of growing and unchanging microenterprises had Marathi language skills, compared to women owners of declining microenterprises whose ability to speak, read, or write Marathi was in the range of 55–57 percent.

There was a major difference between the male and female sets in the relationship between language abilities and income change. Among men, English writing ability was related to the income change (Pearson Chi square = 7.05, $p < .05$, two-tailed), but the direction of the relationship was not clear. Sixty-five percent of male owners/managers of growing microenterprises knew how to write English, compared to 51 percent of those in unchanging and 66 percent of those in declining microenterprises (see Table B.9 in Appendix B). It appears that the ability to write English might have provided the opportunity for male respondents to communicate in English with customers or suppliers

who are from outside Mumbai, thereby enhancing the growth potential of the microenterprises.

Among women, Marathi language ability (speaking, reading and writing) was related to the income change of the microenterprises (see Table B.10 in Appendix B). Those who were able to speak, read, and write Marathi tend to lose less business, compared to those who do not have these language skills. As the women-owned microenterprises were more local customer oriented, Marathi speaking ability would have created more confidence among the customers, thus resulting in increased income growth. Slightly more than three-quarters of women entrepreneurs with growing income knew how to write Marathi, compared to 55 percent of the declining income group.

We next created a composite mobile use index that includes use of mobile phones in calling employees, suppliers, customers, business people in other parts of Mumbai, sending SMS messages to customers and to business people in other parts of Mumbai, paying bills from suppliers, and withdrawing or depositing money (Cronbach's alpha = 0.62). Correlating this composite index of mobile use with various language skills for female business-owners, we found weak correlations between the use of mobile phones for business and various language skills: for Marathi-speakers (Pearson Correlation = 0.15, $p < .05$, two-tailed); for Marathi readers (Pearson Correlation = 0.18, $p < .05$, two-tailed), and for Marathi writers (Pearson Correlation = 0.19, $p < .001$, two-tailed). Thus, effective use of their own mobile phones and use of worker's mobile phones among the women microentrepreneurs who had Marathi language capabilities might contribute to the ability of female microentrepreneurs to run a more profitable business.

In terms of numerical ability, among men who were owners/managers of growing microenterprises, 48 percent knew how to calculate tax, interest rates, etc., and 45 percent knew how to do simple mathematical calculations. Among those with unchanging microenterprises, 56 percent could do simple mathematical calculations and 36 percent could do tax-related calculations. The numerical abilities of male owners/managers of declining microenterprises were similar to those of the owners/managers of unchanging microbusinesses. Overall, numerical ability was independent of income change in microenterprises owned/managed by men.

Approximately half of the women who owned growing or unchanging microenterprises could do tax- and interest rate-related calculations. Sixty-five percent of female owners of declining microenterprises were able to do similar calculations. As was the case with male microentrepreneurs, we did not find any statistical significance relationships between numerical ability and income change.

An analysis of education levels found that 32 percent of male owners/managers of growing microenterprises had completed high school or left school at grade ten, followed by 30 percent who had earned a bachelor's degree, 15 percent who had a higher secondary school or certificate education, 16 percent who were primary school finishers, and 1 percent with a master's degree. Similar trends were present in male owners/managers of unchanging and declining microenterprises. Among women microentrepreneurs, 41 percent of those who owned growing microbusinesses had earned a bachelor's degree, while 31 percent were high secondary/grade 12 school finishers and

24 percent had attended or finished high school. Some 37 percent of female owners of unchanging microbusinesses and 40 percent of those who owned declining microenterprises held a bachelor's degree. Thirty-two percent of women who owned unchanging microenterprises and 34 percent of female owners of declining microenterprises were high school finishers, while 16 percent of women who owned unchanging businesses and 18 percent who owned declining businesses had only completed primary school.

In the sample sets of both men and women, there was no relationship between education and income levels. One-quarter of both male and female microentrepreneurs in all categories of income levels had taken formal computer training. A slightly higher proportion of male owners-managers of growing microenterprises (35 percent) had taken computer classes. Further analysis showed, however, that computer education was independent of microenterprise income levels.

SUMMARY

What, then, have we learned about the relationship of ICTs and microenterprise growth in an urban setting? In our two probability-based samples, slightly more than one out of ten microenterprises was a growing business with higher year-over-year revenues (12 percent among microenterprises owned/managed by men or owned by women). In about half the microenterprises, income had not changed compared to a year before our survey (57 percent for male owned/managed microbusinesses and 52 percent for female-owned microenterprises). Approximately one-third of the very small businesses examined experienced declining income (36 percent for microenterprises owned by women; 31 percent for microenterprises owned/managed by men). Strikingly, close to half of the microentrepreneurs in this last group—both men and women—were unable to pinpoint the reasons for the falling income.

Our data illuminates some significant differences between microenterprises owned by women and those owned/managed by men (see Table 10). For example, compared to male microentrepreneurs, women who own microenterprises are more likely to hire additional workers during times of growth or fire more workers when business income falls. Across the trade and services economic sectors, microenterprises owned by women are generally healthier, i.e., income declines less. However, for male owned/managed microenterprises income growth appears to be independent of broad economic sectors.

TABLE 10: Significant Linkages: Income Change, ICT Ownership and Usage, Characteristics of Microentrepreneurs and Microenterprises

Variable	Changes in Income	
	Men	Women
Number of hired workers	Increases	Increases
Customers from other parts of Mumbai	Increases	Decreases
Registration with the government	Increases	Decreases
Business domain	No change	Increases in services & trade
Total ICT access	No change	Increases
Mobile ownership	Increases	Increases
Calling customers using mobiles	Increases	Increases
Use of home computers	Increases	No change
English writing ability	Increases	No change
Marathi language ability (speaking, writing & reading)	No change	Increases

Given the nature of most microenterprises, it was not surprising to find that both businesses owned by women and those owned/managed by men had a largely walk-in customer base. Serving customers from other parts of Mumbai or outside Mumbai was associated with increased income for microenterprises owned/managed by men, but not for female-owned businesses. Indeed, female microentrepreneurs find their business' income levels to be negatively affected when their microenterprise caters to customers outside of Mumbai. While it appears that personal meetings with customers are still instrumental in strengthening business ties for microentrepreneurs and for generating revenues, the finding that having customers from outside Mumbai is detrimental to microenterprises owned by women requires further investigation.

We also found that growing microenterprises owned/managed by men were more likely to have attributes of formality (registering with the government, keeping more detailed business records, setting up a bank account), while growth microenterprises owned by women tended not to share those indicators of formality.

Among all the possible platforms and modes of ICT use by the microenterprises (mobile phone, use of home computer for business, use of computer at work, use of Internet at work and Internet cafés, sharing friends' and workers' mobile phone, or public calling offices), use of own mobile phone predominated among both men and women. Most importantly, ownership of a mobile was associated with income growth in microenterprises of both men and women. However, women who owned microenterprises with growing income appeared to be making greater use of ICTs.

More than three-fourths of hired workers in microenterprises owned/managed by men have mobile phones, but according to the owners-managers, those phones are only rarely

used in the business. However, even though the absolute numbers are small, when the workers' mobile phones are used for business purposes, there is a positive linkage to income growth. The microentrepreneurs we interviewed were generally not averse to the idea of having or using computers for business. However, most computers were kept at home and few respondents had any very good understanding of how to use computers in the business context. It is possible that increased, knowledgeable use of computers in business might result in positive income change for microenterprises.

Among the personal characteristics of the owners or managers of the microenterprises, language abilities, especially English writing ability among men and Marathi speaking ability among women, tended to be associated with income growth. For men, English writing abilities might help in communicating with customers and suppliers who are not from Mumbai and might be not comfortable in Marathi or Hindi. Among women, Marathi language skills might help instill confidence in the local customers, solidifying social and commercial ties.

Chapter 5: When ICTs Matter

KEY FINDINGS

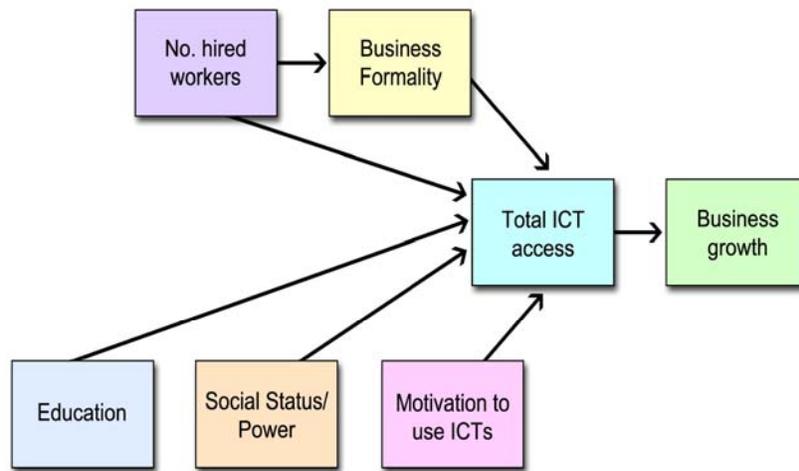
- The more access to ICTs a microentrepreneur has, the more likely her/his business will have year-over-year income growth.
- The more positive a woman microentrepreneur feels about her status and power because of her business, the more she will be motivated to use ICTs for business.
- After a microentrepreneur owns a mobile for at least two years, using his/her mobile for business purposes is more likely to be associated with greater microenterprise income.

This chapter builds on and extends the findings from the preceding two chapters. Its purpose is to provide the most focused picture possible of when using ICTs makes a significant difference in the success of urban microenterprises. In a sense we are asking: Can we identify those urban microentrepreneurs and/or microenterprises for which ICT use is associated with economic growth? While we have already reported some findings that speak to this question in Chapters 3 and 4, our goal here is to model the relative contribution of a number of variables to business growth. We believe that ICTs cannot be treated as stand-alone factors in creating economic growth, but rather work in unison with other behavioral, enterprise, and respondent variables.

As part of the statistical exploration, we examined whether linkage between ICTs and economic growth is mediated by other variables, such as the number of hired workers, total ICT access, the motivation of the microentrepreneurs to use ICT, the perception microentrepreneurs have of their status because they own a business, the degree of business formality, and respondent education. A model of possible relationships between business growth and six predictor variables is presented in Figure 8.

We hypothesized that business growth would be correlated with how many ICTs the microentrepreneur had access to for business purposes. To repeat, this is the central question of our study, since being able to demonstrate such a micro-level relationship would support the widespread assertion that ICTs do indeed facilitate economic development. Taking the microenterprise as the unit of analysis, we hypothesized that the greater the number of hired workers in a business, the more likely it would be that the informal microenterprise would take on characteristics of a formal microbusiness. This might be so because a microenterprise with more workers most likely would be doing a larger volume of business, making it more visible to governmental authorities and creating a need for more sophisticated, possibly ICT-based record keeping. To the extent that a microenterprise with larger numbers of employees also has value chain-related needs (see Chapter 3), it might seek to meet those communication needs by increasing its access to and use of ICTs.

FIGURE 8: Model of Microenterprise Growth



Turning to characteristics of the individual microentrepreneur, we hypothesized that the more formal education a businessperson had, the more likely it would be that she or he would have acquired higher levels of literacy, numeracy, and possibly even computer skills. With such attributes, a microentrepreneur might also show higher levels of computer and Internet self-efficacy, the belief in one’s capabilities to organize and carry out computer or Internet behaviors directed to specific goals (Compeau & Higgins, 1999; Eastin & LaRose, 2000). If this were so we might expect that such a person also might engage in more behaviors using ICTs, perhaps to achieve business goals.

Drawing on the digital divide literature (see, for example, Van Dijk, 2005), a group of variables to measure motivation to use ICTs was also included in the model. Whether a microentrepreneur believed that ICT use would produce benefits for his or her business or whether, as was frequently the case with our respondents who perceived “no need” to meet their business communication needs by using mobiles or computers (see Chapter 3), the question of motivation is antecedent to ICT access. Lacking a strong motivation to use ICTs is likely to limit a microentrepreneur’s desire to acquire such technologies and would therefore put constraints on the total repertoire of information and communication technologies at the disposal of the microentrepreneur.

Finally, variables of social status and power were included only in our consideration of female microentrepreneurs, since we believed these variables to be of far less significance for the attitudes and behaviors of male microentrepreneurs. By examining how the often marginalized standing of women in developing societies in general interacted with the specific, local status of the women in our sample who were owners of a microenterprise, we hoped to gain new insights into the interplay of individual psychology and the larger culture. If, for instance, a female microentrepreneur gained some measure of increased stature in her immediate social network and perhaps even some increased decision-making power within her family, and if she perceived those

gains to be a function of a belief on the part of others that her business was a growing enterprise, then, depending on her experience with or beliefs about ICTs, she might be motivated to start, continue, or even increase her ICT use.

TESTING THE MODEL OF MICROENTERPRISE GROWTH

Variables to test our model of business growth in microenterprises owned by women were created according to the following procedures (for actual wordings, see Table B.1 in Appendix B):

- The dependent variable,¹² *business growth*, was operationalized as the change in the annual income of the business and the business owner's assessment of the effects on the business of the Mumbai terrorist attacks in November 2008. None of the microenterprises in our sample were targets of those attacks.
- The index of *formality* consisted of items that measured whether the business was registered with the government, whether it had a business bank account, and what bookkeeping practices the business followed.
- The index of microentrepreneurial *motivation to use ICTs for business purposes* was made up of items that indicated the respondent's degree of agreement with Likert-type responses. These statements include the extent to which the mobile phone helped keep the entrepreneur informed about prices and other business news and whether possessing a mobile phone made the entrepreneur more confident that the business would grow.
- The index of *perceived social status and power* was comprised of items such as a measure of the self-confidence of the entrepreneur because she owned a business and the degree of respect from family, friends, and neighbors as a result of that business ownership.
- *Total ICT access* was constructed from items that measured the possession of mobile phones, personal computers, laptop computers, and access to the Internet both in the home and at the workplace.¹³ A logarithmic transformation was performed on the final total ICT scores.

Pearson product-moment correlations were created among business growth and the six possible predictor variables. We attempted similar statistical analyses on probability-based sample data of both men and women. The sample of men, however, did not yield significant results. As a consequence, the first part of this chapter examines only those findings drawing on the database of female microentrepreneurs.

Two of the six independent variables (total ICT access and motivation to use ICTs) were positively and significantly correlated with business growth, although these correlations

¹² The exact wording of survey questions and the (Cronbach's alpha) internal consistency coefficients for the multi-item additive indices constructed can be found in the Table B.1 of Appendix B. While a high Cronbach alpha is to be desired, scores ≤ 0.7 , as reported in Table 1 of the Appendix, are deemed acceptable in exploratory studies such as this (Cronbach, 1951).

¹³ Access to a workplace landline was not included in this index, because, with its inclusion, the Cronbach's alpha for the index of total ICT access fell to an unacceptable level ($\alpha = .53$).

($r = 0.135$ and 0.156 respectively) are relatively weak (see Table 11). These two results give some support to the relationships postulated in our model of business growth. The correlation between a respondent's total ICT repertoire and business growth is a clear demonstration that ICTs can have a real, positive impact on micro-level economic development. In addition, the correlation between motivation and business growth substantiates the need to go beyond physical access to address relevant psychological factors when assessing digital divides.

TABLE 11: Pearson Product-moment Correlations between Business Growth and Selected Variables

Variable	1	2	3	4	5	6	7
1 Business growth	1.00	-.172**	.156*	.045	.135*	-.04	.09
2 Formality	-.172**	1.00	-.224**	-.061	.218**	.22**	.27**
3 Motivation	.156*	-.224**	1.00	.365**	.150*	-.20**	-.02
4 Perceived social status	.045	-.061	.365**	1.00	.195**	-.09	-.01
5 Total ICT access	.135*	.218**	.150*	.195**	1.00	.18**	.27**
6 Number of hired workers	-.042	.266**	-.200**	-.090	.181**	1.00	.03
7 Education	.088	.184**	-.022	-.010	.273**	.03	1.00

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

The number of hired workers was not significantly associated with business growth, as measured by the two-item index of business growth we used in the current chapter.¹⁴ However, the number of hired workers was weakly correlated with total ICT access ($r = .181$, $p < .01$ two-tailed test). Whether, as we expected, microentrepreneurs with larger numbers of hired workers turn to ICTs to meet business communication needs associated with having more workers is not clear. One finding—that only 1 percent of women interviewed said they ever sent SMS messages to their employees—suggests that it is more likely that this correlation is the result of other factors, possibly the overall stability or revenue of the enterprise.

The correlation between business formality and enterprise growth was weak and negative ($r = -.172$, $p < .01$ two-tailed test). This finding suggests that the more formal the

¹⁴ In Chapter 4, we reported a moderate, positive correlation between the number of hired workers in microenterprises owned by women and owned/managed by men. That correlation was based on a one-variable indicator of business growth (the reported year-over-year change in business income). However, since business growth as discussed in the current chapter is based on an index composed of two variables—year-over-year change in income and owners' assessment of impact of terror attacks on business growth—we are inclined to believe that the statistically insignificant correlation reported here is a better indicator of the relationship between number of employees and business growth.

enterprise, the less likely it will experience growth. This result is in keeping with that part of the literature (Farrel, 2004; La Porter & Shelifer, 2008) that suggests microenterprises will do better economically if their owners make a conscious decision to stay in the informal sector.

However, business formality was positively correlated with total ICT access ($r = .218$, $p < .01$ two-tailed test) and this suggests that greater formality generates business communication needs that microentrepreneurs attempt to meet by using ICTs. Additionally, the number of hired workers is somewhat more strongly correlated with enterprise formality ($r = .266$, $p < .001$). Thus, we can say that an increase in number of workers might induce the urban microenterprises to use more ICTs and to move towards formality. Finally, we can infer that formalization of small businesses might lead to increase in use of ICTs which in turn is related to business growth.

Self-perception of social status and power because of owning a business is not significantly correlated with business growth. However, self-perception of status and power is moderately correlated with motivation to use ICTs for business purposes ($r = .365$, $p < .01$ two-tailed test). Perhaps as we speculated above, self-perception of status and power may act indirectly through motivation to influence business growth. If a women microentrepreneur perceives that her social standing and related power is linked to her business, then perhaps she will turn to ICTs as way of increasing the viability of her microenterprise and thereby garner additional amounts of standing and power.

Finally, respondent education was not significantly correlated with business growth but, as the model predicted, education was correlated with total ICT use ($r = .273$, $p < .01$ two tailed test). The ability to read and write in English was also correlated with total access to ICTs ($r = .274$, $p < .01$ two-tailed test) but was not found to be related to business growth.

To further examine predictors of business growth, we carried out a standard multiple regression analysis, with business growth as the dependent variable and ICT access, business formality, motivation, self-perception of status and power, and types of industrial domains as predictors.

The results of the regression showed a very weak, but statistically significant relationship between the variables ($R^2 = 0.09$, $F(6,223) = 3.63$, $p < .01$) (see Table 12). Total ICT access significantly predicted business growth ($\beta = 0.18$, $p < .05$), as did formality ($\beta = -0.22$, $p < .01$). The nature of the industrial domains—services ($\beta = 0.37$, $p < .05$) and trade ($\beta = 0.41$, $p < .05$)—are also significant predictors. Further analysis of difference between sub-groups of population over trade and services, using the Chow test (see Table B.2 in Appendix B), showed that only trade was a significant predictor $F(4,123) = 9.877$, $p < 0.05$. In addition, neither self-perception of status and power nor motivation for ICT use was a significant predictor.

Based on this regression analysis, it is now possible to revise our model of business growth in microenterprises owned by women. As Figure 9 shows, business growth continues to have a significant relationship with microentrepreneurial access to ICTs. However, business sector has emerged as the most powerful influence on growth. Specifically, microenterprises owned by women in the trade sector of the economy

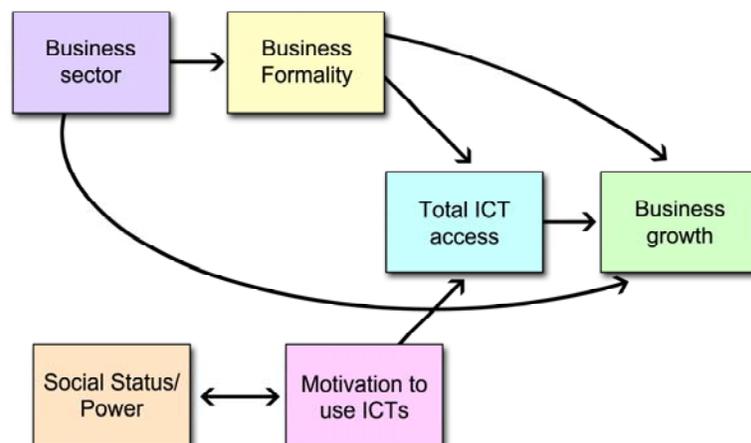
appear to have the greatest potential for income growth. A wide variety of microenterprises can be classified as being in trade, ranging from the smallest sellers of basic foodstuffs to larger microenterprises that act as middlemen in global supply chains for designer leather goods and clothing. Future research will be required to gain a more thorough understanding of what characteristics mark those growth microenterprises in the trade sector.

TABLE 12: Regression Coefficients of Formality, Motivation, Perceived Social Status, Total ICT Access, and Industrial Domain on Business Growth

Coefficients*					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	1	Sig
(Constant)	-96.901	30.474		-3.180	.002
Formality	-3.670	1.178	-.219	-3.116	.002
SMEAN (MEmotivation)	2.897	1.939	.107	1.494	.137
Respect	-.564	1.856	-.021	-.304	.761
Totictaces	74.478	28.824	.183	2.584	.010
Services	13.225	6.738	.368	1.963	.051
Trade	14.509	6.841	.406	2.121	.035

*Dependent variable: Business growth. $R^2 = 0.09$. Totictaces = Index of Total ICT Access; SMEAN = Index of motivation to use ICTs for business purposes.

FIGURE 9: Revised Model of Microenterprise Growth



In the revised model, business formality also remains a significant influence on business growth. However, the negative beta weight for formality points once more to the inverse relationship between microenterprise formality and growth. Why greater microenterprise formality should inhibit the ability of such a business to increase its income is an unsolved problem in the literature of development economics. Some scholars suggest that informal enterprises are actually or potentially very productive, but are kept from exercising that productivity because microentrepreneurs tend to keep their businesses informal out of a concern over unfair taxes, burdensome government regulations, and limited access to capital (de Soto, 1989). If these barriers to becoming more formal are eased, then microenterprises are more likely to register, borrow, and, due to the benefits of a more official status, grow and generate economic development (United Nations, 2009).

In contrast, other economists present a more pessimistic view of microenterprises and their owners. Farrell (2004), for example, argues that microenterprises must stay small and hence unproductive in order to avoid detection by governments, while La Porta & Shleifer (2008) report data from a 27-nation survey showing that few unregistered microenterprises ever move from the informal sector to the formal sector.

Paradoxically, formality is positively correlated with total ICT access (see Table 11 above). Thus, as the revised model suggests, microenterprise formality might lead to an increased need and choice of ICTs at the same time that it diminishes the power of greater ICT use to have a positive impact on microenterprise income. Sorting out this tangled relationship is also worthy of additional research in the future.

THE GENDER CONTEXT

Specifically with regard to women who own microenterprises, higher perceived social status is reinforced by various other characteristics of the female entrepreneurs. Out of 231 female respondents, more than eight out of 10 (84 percent) have a personal bank account out of which most of these women can make withdrawals or payments on their own. A relatively small number (20 percent) had joint bank accounts, mostly with their husbands.

Given the patriarchal nature of Indian society, which prescribes home-based roles for women, the percentage of women who own and run businesses and who are married is a strikingly large 87 percent. Ownership of a business must then be understood in the context of dual home-work challenges. Only a few (8 percent) married, female business women in our study had no children (see Table 13). Women with two children form the modal group at 41 percent, followed by women with one child (27 percent). Although women continue to perform the dual role of child-rearing and microenterprise ownership, only 13 percent brought their children to the workplace. Among children who are brought to work by their mother, only 12 percent fell below the legal working age of fourteen. Though we did not collect data on whether older children are working in their mother's businesses, our personal observations confirm that it is common to find children working in microenterprises.

Women who own and run a microenterprise are not free from domestic work. Still, 42 percent had part-time domestic help and a surprising 20 percent said their husband shared

in the work of maintaining the home. Some 90 percent of female microentrepreneurs travel up to eight kilometers to get to their place of business, suggesting that the overwhelming number do not “live above the shop.” Only a small percentage of women who own microenterprises (7 percent) are the sole breadwinners for their family. Moreover, in comparison with earnings of other, working family members, only a very small proportion of female owners of microenterprises (3 percent) earned more than anyone else in the household. The greatest number of female microentrepreneurs (64 percent) earned less than other wage-earning members of the family. Overall, we would conclude, based on the data discussed in this section and the findings analyzed above about business growth, that women who own microenterprises certainly act within the broader framework of patriarchy, but many are also aided by ICTs in successfully accomplishing business activities.

Table 13: Gender-Specific Characteristics of Women Entrepreneurs

Description	Composition (Percentage)
Having a personal bank account	84 (N = 231)
Make withdrawals or payments on their own	88 (N = 193)
Entrepreneurs with joint bank account	24 (N = 193)
Person with whom joint account is present	Husband – 96 (N = 46)
Entrepreneurs with no children	8 (N = 208)
Entrepreneurs with two or less children	68 (N = 208)
Entrepreneurs who bring children to work	13 (N = 208)
Children are at work but below legal working age, 14 years	12 (N = 28)
Help in domestic work	Part-time servants/maids – 42 (N = 31) Husbands assist – 20 (N = 231)
Amount of entrepreneurs who travel eight kilometers or less to the workplaces.	90 (N = 231)
Entrepreneurs who earn more than other family members	2.8 (N = 231)

BUSINESS GROWTH, GENDER, AND LENGTH OF ICT OWNERSHIP

As expected, we found that microbusinesses owned/managed by men were more likely to experience economic growth than microenterprises owned by women, $F(1, 555) = 432.68, p < .001$. The data also showed that on average, male microentrepreneurs said their businesses experienced an economic growth of $M^{15} = 3.5, SD = .68$, compared to $M = 2.3, SD = 0.68$ for female microentrepreneurs. This finding came as no surprise given prevailing social and cultural practices in India. In fact, gender differences accounted for

¹⁵ As explained in the list of measured, business growth is composite value of the log transformation of the percentage of income change when compared to the previous year and change + Change in business after Mumbai terror attacks. This is explained in the list of measures.

so much of the variation in the growth of microenterprises that other contributing factors found were small in comparison. Nonetheless, we have identified other attributes of urban microenterprises or their owners and managers that are associated with ICT use and economic growth.

For instance, by expanding our conceptualization of physical access to ICTs from just ownership/availability to include *length of ownership*, and by examining how long it had been since a microentrepreneur had adopted a given ICT, we found some statistically significant gender differences (see Table 14). On average, women who owned microenterprises had used a personal computer almost two years longer ($M = 4.9, SD = 3.56$) than male microentrepreneurs ($M = 3.1, SD = 2.66$), $F(1, 76) = 6.23, p < .05$ (see Table B.3 in Appendix B for ANOVA tests). Female microentrepreneurs had also used a laptop more than a year and a half longer ($M = 3.8, SD = 1.60$) than male owners/managers ($M = 2.2, SD = 1.87$), $F(1, 22) = 5.14, p < .05$.

Regardless of gender, microentrepreneurs who had been using mobile phones for a longer period of time were more likely to report greater business growth, $r = .110, p < .005, N = 485$.¹⁶ Specifically, it appears that two years of mobile phone use might be some sort of threshold at and above which microentrepreneurs were more likely to report greater economic growth than business people who had been using mobile phones for less than two years, $F(1, 496) = 10.39, p = .001$.

TABLE 14: Length of ICT Ownership

	Mean	SD
How many years ago did you first get a personal computer?		
Men (N = 42)	3.1	2.66
Women (N = 36)	4.9	3.55
How many years ago did you first get a laptop?		
Men (N = 13)	2.2	1.87
Women (N = 11)	3.8	1.60
How many years have you been using this [mobile] phone?		
Men (N = 286)	3.7	2.39
Women (N = 202)	3.7	2.21

NOTE: For ANOVA analysis, see Table B.3.

This finding supports our suggestion that physical access to ICTs alone does not always generate economic value. In fact, what it does suggest is that there is a time lag or latency period between the time of mobile phone adoption and the time when this adoption starts to generate economic value. We think that this lag might exist because micro-entrepreneurs require time to familiarize themselves with the technology and find ways to adapt the technology to their businesses. Future research should seek to learn more about the characteristics, behaviors, and microenterprise variables associated with early adopters of the mobile phone for business communication and about the trajectories of use that their ICT usage follows.

¹⁶ This finding is based on analysis of the pooled sample of men and women.

In addition to reconceptualizing ICT access to take into account a dimension of time, we also probed several specific uses of mobile phones. A composite index, *total mobile use* (Cronbach's Alpha = 0.644), comprising the following three items was formed: How often do you use the mobile to call customers? How often do you use the mobile to call employees? How often do you use the mobile to call suppliers? Respondents were then dichotomized into users and non-users of mobile phones for businesses purposes based on their score on the scale. On the scale of 1–5 (1 = never use and 5 = very frequently use), the users of mobile phones for business had a mean of 2.14 while the non-users had a mean of 1.0. Since a value of one was assigned to a response of “never,” non-users never used their mobile phones across all three items.

We then linked scores on the index of total mobile use to business growth. Based on this analysis, it appears that urban microentrepreneurs experience different levels of economic growth depending on how much they use their mobiles for business communication. On average, microentrepreneurs who used their mobile phones for more business purposes had greater business growth ($M = 3.4$, $SD = 0.83$) compared to those who did not have high scores on the mobile use index ($M = 2.9$, $SD = 0.89$), $F(1, 495) = 40.83$, $p < .001$. Furthermore, the item that correlates most strongly with business growth is “How often do you use the mobile to call customers?” ($r = .183$, $p < .001$, $N = 497$).¹⁷ In other words, microentrepreneurs who use their mobile phones to call their customers are more likely to experience higher business growth. We also found that microentrepreneurs who use mobile phones for business have owned mobile phones for a longer period of time ($M = 3.9$ years, $SD = 2.75$) compared to those who do not use their mobile phones for business ($M = 3.5$ years, $SD = 2.03$), $F(1, 486) = 3.15$, $p = .077$. This is consistent with our earlier finding that microentrepreneurs who have adopted mobile phones for two years or more are likely to experience greater growth in business income.

To further examine the relationship between business growth and the independent variables discussed above, a step-wise multiple regression analysis was conducted, with business growth as the dependent variable and gender, length of mobile phone use, business use of mobile phones, number of hired workers, age, and education as the predictor variables.

As can be seen in Table 15, the set of independent variables we examined accounted for a significant amount of variance in business growth, $R^2 = .462$, $F(7, 482) = 59.25$, $p < .001$. Total access to different types of ICTs was kept in the model and the analysis provide yet additional support for the more nuanced conceptualization of physical access that we have proposed. The length of mobile phone use was positively associated with business growth ($\beta = .14$, $p < .001$). More frequent use of mobile phones for business purposes was also positively associated with business growth ($\beta = .08$, $p < .005$). So, too, is the number of hired workers ($\beta = .10$, $p < .001$), while the individual microentrepreneur's age was negatively associated with business growth ($\beta = -.07$, $p < .05$).

¹⁷ This finding is based on analysis of the pooled sample of men and women.

TABLE 15: Regression Coefficients of Business Growth as the Dependent Variable and Selected Independent Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	Df1	Df2	Sig. F Change
1	.650 ^a	.423	.421	.68870	.423	357.109	1	488	.000
2	.650 ^b	.423	.420	.68938	.000	.051	1	487	.822
3	.664 ^c	.442	.438	.67870	.019	16.434	1	486	.000
4	.668 ^d	.446	.441	.67691	.004	3.585	1	485	.059
5	.675 ^e	.456	.450	.67129	.010	9.156	1	484	.003
6	.680 ^f	.462	.455	.66859	.007	2.952	2	482	.053

^a. Predictors: (Constant), Gender

^b. Predictors: (Constant), Gender, Total ICT Access

^c. Predictors: (Constant), Gender, Total ICT Access, Length of Mobile Phone Use

^d. Predictors: (Constant), Gender, Total ICT Access, Length of Mobile Phone Use, High Low Business Use of Mobile

^e. Predictors: (Constant), Gender, Total ICT Access, Length of Mobile Phone Use, High Low Business Use of Mobile, Number of Hired Workers

^f. Predictors: (Constant), Gender, Total ICT Access, Length of Mobile Phone Use, High Low Business Use of Mobile, Number of Hired Workers, Age, Education

NOTE: For Analysis of Variance for these models, see Table B.3.

CONCLUSIONS

Which urban microentrepreneurs and what microenterprises seem most likely to benefit from investing in ICTs? Among women who own microenterprises, business growth is a function of ICT access and is related to motivation to use ICTs for business purposes. Moreover, the more positive a woman microentrepreneur feels about her status and power because of her business, the more she will be motivated to use ICTs for business. And finally, businesses owned by women in the trade sector of the informal economy may be especially likely to experience economic growth from the combination of ICT access and owner motivation to use ICTs for business.

While similar patterns were not observed among male owners/managers of microenterprises, our findings suggest that both male and female microentrepreneurs can derive economic value from mobile use, but only after a minimum of two years of ownership. While across the entire sample of both female and male microentrepreneurs the mean length of mobile phone use was about 3.5 years, the positive impact on business income begins to be statistically significant at the two-year mark. It is these more experienced mobile users who are also more likely to use their mobile phones to call their customers, employees, and suppliers—generating additional business growth.

There is a caveat to these optimistic conclusions that must be discussed. The data presented here were gathered using a probability sample design, making it likely that the findings are more representative than a large number of previous studies based on smaller or convenience samples. However, we also acknowledge that any causal relationship

between business growth and the variables just examined should for the moment be considered only possible or hypothetical, because the findings come from a cross-sectional and not a longitudinal study. Future research, we would suggest, should try to overcome this shortcoming through either longitudinal research that tracks urban microentrepreneurs over multiple years or by field experiments where key variables can be isolated and manipulated.

In short, whether ICTs have the impact our data suggests remains an open question. The correlations and regression models all point toward a causal conclusion. Still, it is possible that business growth in microenterprises precedes the acquisition and use of ICTs. Successful entrepreneurs for example may also have adopted mobile phones earlier than those less successful because they are in a better financial position to own one. There also might be a recursive relationship between business growth and ICT access and use. In that case, establishing the temporal priority of ICT access or use and business growth becomes more difficult. Indeed, it is even possible that, as we have shown above, microentrepreneurs who already use their mobile phones for personal matters, might decide to use their mobiles in business as they become aware of technological upgrades that are business-relevant and increasingly inexpensive.

The role of ICTs in social and economic development is a complex phenomenon. To understand the patterns involved would require systematic examination of how multiple, interdependent factors play out in different user groups and environments. The goal of such research, as was our intention here, is to provide evidence-based understandings—knowledge that might in some measure lead to policies and programs to better meet the needs of urban microentrepreneurs in the poorest nations of the world.

References

- Agence France-Presse. (2009). Mobile phones ring in growth in emerging markets. October 7. Retrieved October 9, 2009 from <http://www.google.com/hostednews/afp/article/ALeqM5hGASdtIQggGRUqWaS2i0izbguuA>.
- Babbie, E. (2004). *The Practice of Social Research* (10th edition.). Belmont: Thomson, Wadsworth.
- Benkler, Y. (2006). *The Wealth of Networks*. New Haven: Yale University Press.
- Bharti Airtel (2007). *Mobile Tariffs – Mumbai*. Retrieved August 23, 2007 from http://airtel.in/Level2_t11.aspx?path=1/6/7.
- Bothra, V. (2006). Future of Internet in India linked to mobiles. CNET Asia. October 30. Retrieved February 21, 2008, from <http://asia.cnet.com/blogs/technologywalla/post.htm?id=61963623>.
- Boyera, S. (2006). The Mobile Web to Bridge the Digital Divide? Paper presented to W3C Workshop on the Mobile Web in Developing Countries, Bangalore, December 5–6. Retrieved September 4, 2007, from http://www.w3.org/2006/12/digital_divide/IST-africa-final.pdf.
- Caslon Analytics (2007). Cybercafés. Retrieved June 7, 2007 from <http://www.casloncom.au/cafenote.htm>.
- Castells, M., Fernandez-Ardevol, M., Qiu, J. & Sey, A. (2007). *Mobile Communication and Society: A Global Perspective*. Cambridge, MA: MIT Press.
- Chawla, D., & Behl, R. (2006). Perception Study of Cybercafé Users. *Global Business Review*, 7(1), 17–41.
- Chipchase, J. (2005). Understanding non-literacy as a barrier to mobile phone communication. Tokyo: Nokia Research Center. Retrieved April 1, 2008, from <http://research.nokia.com/bluesky/non-literacy-001-2005/index.html>.
- Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability. *Technology in Society*, 28, 63–80.
- Cohen, N. (2001). Digital Dividend: Case Studies: What Works: Grameen Telecom's Village Phone. Digital Dividends. Retrieved April 30, 2010, from http://pdf.wri.org/dd_grameen.pdf.
- Comminos, A., Esselaar, S., Ndiwalana, A., and Stork, C. (2008). Towards Evidence-based ICT Policy and Regulation, Vol. 1, Policy paper 4. Retrieved April 10, 2010, from http://www.researchictafrica.net/new/images/uploads/RIA_Mobile-banking.pdf.
- Compeau, D. R., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*, 23(2), 145–158.

- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297–334.
- De Soto, H. (1989). *The Other Path: The Invisible Revolution in the Third Worlds*. New York: Harper and Row Publishers.
- Donner, J. (2004). Microentrepreneurs and mobiles: An exploration of the uses of mobile phones by small business owners in Rwanda. *Information Technologies and International Development*, 2(1), 1–21.
- Donner, J. (2006a). Internet use (and non-use) among urban microenterprises in the developing world: an update from India. Paper presented at AOIR 7.0. September, Brisbane, Australia. Retrieved August 6, 2007, from: http://www.jonathandonner.com/jdonner_AoIR_microenterprise.pdf.
- Donner, J. (2006b). The use of mobile phones by microentrepreneurs in Kigali, Rwanda: Changes to social and business networks. *Information Technologies and International Development*, 3(2), 3–19.
- Donner, J. (2007). Customer Acquisition among Small and Informal Businesses in Urban India: Comparing Face-to-Face and Mediated Channels. *The Electronic Journal on Information Systems in Developing Countries* 32(3), 1–16. Retrieved February 14, 2008, from <http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/464/220>.
- Donner, J. (2008). Research approaches to mobile use in the developing world: A review of the literature. *The Information Society*, 24(3), 140-159.
- Donner, J. (2009). Blurring livelihoods and lives: The social uses of mobile phones and socioeconomic development. *Innovations: Technology, Governance, Globalization*, 4(1), 91–101.
- Duncombe, R. (2006). Using the livelihoods framework to analyze ICT applications for poverty reduction through microenterprise. *Information Technologies and International Development*, 3(3), 81-100.
- Duncombe, R., & Heeks, R. (1999). Information, ICTs and Small Enterprise: Findings from Botswana. Retrieved January 20, 2007 from <http://unpan1.un.org/intradoc/groups/public/documents/CAFRAD/UNPAN011651.pdf>.
- Duncombe, R., & Heeks, R. (2002). Enterprise across the digital divide: Information systems and rural microenterprise in Botswana. *Journal of International Development*, 14, 61–74.
- Duncombe, R., & Heeks, R. (2005). Information & Communication Technologies (ICTs), Poverty Reduction and Micro, Small & Medium-scale Enterprises (MSMEs): A Framework for Understanding ICT Applications for MSMEs in Developing Countries. Vienna: United Nations Industrial Development Organization. Retrieved March 17, 2007, from http://www.unido.org/file-storage/download/?file_id=83230.
- Eastin, M., & LaRose, R. (2000). Internet Self-Efficacy and the Psychology of the Digital Divide. *Journal of Computer-Mediated Communication*, 6(1), September.
- Eicher. (2002). City Map: Mumbai. Eicher Good Earth Ltd: Mumbai.

- Esselaar, S., Stork, C., Ndiwalana, A., & Deen-Swarray, M. (2007). ICT usage and its impact on profitability of SMEs in 13 African countries. *Information Technologies and International Development*, 4(1), 87-100.
- Eversole, R. (2004). Change makers? Women's microenterprises in a Bolivian city. *Gender, Work and Organization*, 11(2), 123–142.
- Farrell, D. (2004). The hidden dangers of the informal economy. *McKinsey Quarterly*, 3, 26–37.
- FoneArena. (2007). Mobile Phone Prices and Price List for India. Retrieved August 23, 2007, from http://www.fonearena.com/mobile_phone_pricelist.html.
- Frempong, G. (2009). Mobile telephone opportunities: the case of micro- and small enterprises in Ghana. *INFO*, 11(2), 79–94
- Galloway, L., & R. Mochrie. (2005). The use of ICT in rural firms: a policy oriented literature review. *INFO*, 7(3), 33–46
- Galperin, H. (2005). Wireless networks and rural development: Opportunities in Latin America. *Information Technologies and International Development*, 2(3), 47–56.
- Galperin, H., and Mariscal, J. (Eds.). (2005). Digital poverty: Perspectives from Latin America and the Caribbean. Ottawa: International Development Research Centre.
- Gelb, A., Mengistae, T., Ramachandran, V., & Shah, M. (2009). To formalize or not to formalize? Comparisons of microenterprise data from Southern and Eastern Africa. Working Paper No. 175. Center for Global Development. Retrieved September 11, 2009 from <http://www.cgdev.org/content/publications/detail/1422458>.
- Gopinath, K. (2006). Mobile Web and Developing Countries. Presented to the W3CWorkshop on the Mobile Web in Developing Countries, Bangalore, December 5–6. Retrieved August 20, 2007, from <http://www.w3.org/2006/07/MWI-EC/PC/gopinath.pdf>.
- Government of India. (2004). Broadband Policy 2004. New Delhi: Ministry of Communications and Information Technology, Department of Telecommunications. Retrieved June 4, 2007, from <http://www.dot.gov.in/ntp/broadbandpolicy2004.htm>.
- Gugnani, V., Arora, K., & Shukla, V. N. (2006). Issues & Challenges in Developing Multilingual Applications for Mobile: Indic Languages Perspective. Paper presented to W3C Workshop on the Mobile Web in Developing Countries, Bangalore, December 5–6. Retrieved April 1, 2008, from http://www.w3.org/2006/07/MWI-EC/PC/cdac_Mobilepaper.pdf.
- Gurumurthy, A. (2006). Promoting gender equality? Some development- related uses of ICTs by women. *Development in Practice*, 16(6), 611–616.
- Haseloff, A. (2005). Cybercafés and their potential as community development tools in India. *The Journal of Community Informatics*, 1(3), 53–65.

- Hobbs, J., & Bristow, T. (2007). Communal computing and shared spaces of usage: a study of Internet cafes in developing contexts. Paper presented to the ASIS&T I.A. Summit, Las Vegas, March 22–26. Retrieved February 15, 2008, from www.jh-.com/research/communal_computing_shared_spaces_of_use.pdf.
- Hussain, M. (2007) Personal Communication. August 23.
- IDC India. (2007). India Quarterly PC Tracker. 1Q 2007 Release. Retrieved August 21, 2007, from <http://www.idcindia.com/press/Jun12.html>.
- infoDev (2006). Micro-payment systems and their application to mobile networks. Washington, DC: The World Bank. Retrieved February 12, 2008. from <http://www.infodev.org/en/Publication.43.html>.
- IAMAI. (2007). Internet in India. I-CUBE 2007. Mumbai & Delhi: IAMAI. Retrieved February 27, 2008, from <http://www.iamai.in/Upload/Research/I-Cube-2007-Summary-Report-final.pdf>.
- IAMAI. (2010). I-CUBE 2009-2010: Internet in India. Internet and Mobile Association of India, Mumbai. Retrieved April 15, 2009 from <http://www.iamai.in/reports1.aspx>.
- International Telecommunication Union (2007). Measuring the Information Society ICT Opportunity Index and World Telecommunication/ICT Indicators – 2007. Geneva: Telecommunication Development Sector (ITU-D).
- International Telecommunication Union (2009). Measuring the Information Society: The ICT Development Index. Geneva. Retrieved February 12, 2008, from <http://www.itu.int/ITU-D/ict/statistics/ict/index.html>.
- Ivatury, G., and Pickens, M. (2006). Mobile phone banking and low-income customers: Evidence from South Africa. Washington, DC: Consultative Group to Aid the Poor and the United Nations Foundation. Retrieved February 20, 2008, from <http://www.cgap.org/publications/mobilephonebanking.pdf>.
- Jagun, A., Heeks, R., & Whalley, J. (2007). Mobile telephony and developing country micro- enterprise: A Nigerian case study. Working Paper No. 29. Manchester, UK: Development Informatics Group, Institute for Development Policy and Management, University of Manchester. Retrieved February 13, 2008, from <http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/index.htm>.
- Jamaica Ministry of Industry, Technology, Energy and Commerce. (2007). The Jamaica Policy 2007. Retrieved March 17, 2008, from <http://www.mct.gov.jm/Draft%20Telecom%20Policy.pdf>.
- Jensen, R. (2007). The digital provide: Information (technology), market performance, and welfare in the south Indian fisheries sector. *The Quarterly Journal of Economics*, CXXII (3), 879–924.
- Jutting, J., Parlevliet, J., & Xenogiani, T. (2008). Informal Employment Re-loaded. Working Paper No. 266. Geneva: OECD Development Centre. Retrieved March 10, 2008, from <http://www.oecd.org/dataoecd/4/7/39900874.pdf>.

- Konstadakopoulos, D. (2005). From public loudspeakers to the Internet: The adoption of information and communication technologies (ICTs) by small-enterprise clusters in Vietnam. *Information Technologies and International Development*, 2(4), 21–39.
- La Porta, R., & Shleifer, A. (2008). The Unofficial Economy and Economic Development. Brookings Papers on Economic Activity. Conference Draft. Retrieved August 12, 2009, from www.brookings.edu/economics/bpea/bpea.aspx.
- Liedholm, C., & Mead, D. (1987). Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications. MSU International Development Paper No.9. East Lansing, MI: Michigan State University Department of Agricultural Economics. Retrieved April 20, 2007, from <http://www.aec.msu.edu/fs2/papers/older/idp9.pdf>.
- Malik P. (2007). An Analysis of the Reform's of India Telecommunication's Industry: Policy, Regulation and Indicators, LIRNEasia Multi component six country study. Retrieved September 22, 2009 from <http://www.lirneasia.net/wp-content/uploads/2007/04/malik-2007-6cmcs-india.pdf>.
- Martin, L. M., & Wright, L. T. (2005). No gender in cyberspace? Empowering entrepreneurship and innovation in female run ICT small firms. *International Journal of Entrepreneurial Behavior and Research*, 11(2), 162–178.
- Mead, D., & Liedholm, C. (1998). The dynamics of micro and small enterprises in developing countries. *World Development*, 26 (1), 61–74.
- Microsoft India (2008). Microsoft Bhesha: Empowering Indic Language Computing. Retrieved April 1, 2008, from www.bhashaindia.com/.
- Ministry of Micro, Small, & Medium Enterprises (2007). Micro, Small, and Medium Enterprises in India: An overview. Annual Report 2006-2007. New Delhi: Government of India. Retrieved February 14, 2008, from <http://msme.gov.in/ssi-ar-eng-2006-07.pdf>.
- Misra, M. (2007). English still rules Indian literature. Guardian Unlimited. August 13. Retrieved April 2, 2008, from http://blogs.guardian.co.uk/books/2007/08/english_still_rules_indian_lit.html.
- Molony, T. (2006). 'I don't trust the phone; it always lies': Trust and information and Communication Technologies in Tanzanian micro- and small enterprises. *Information Technologies and International Development*, 3(4), 67–83.
- National Sample Survey Organization. (2000). Non-agricultural enterprises in the informal sector in India, 1999–2000 – Key Results (No. 456). New Delhi: Ministry of Statistics and Programme Implementation.
- Nichter, S., & Goldmark, L. (2005). Understanding Micro and Small Enterprise growth. Micro Report #36. Washington: U.S. Agency for International Development. Retrieved April 1, 2007, from http://www.microlinks.org/ev_en.php?ID=10015_201&ID2=DO_TOPIC.

- Nisbett, N. (2005). Growing up connected: the role of cybercafés in widening ICT access in Bangalore and South India. Paper presented to the Information, Technology and Development Panel, Development Studies Association annual conference, Milton Keynes, UK, September 7–9. Retrieved February 15, 2008, from <http://www.devstud.org.uk/Conference05/abstracts/ITD.htm/NisbettITD/DSA05.ppt>.
- Panagariya, A. (2008). The economic cost of the Mumbai tragedy. *Forbes.com*. November 29. Retrieved June 16, 2010 from http://www.forbes.com/2008/11/29/mumbai-economic-cost-oped-cx_ap_1129panagariya.html
- Porteous, D. (2006). *The Enabling Environment for Mobile Banking in Africa*. London: Department for International Development (DFID). Retrieved January 27, 2008, from [http://info.worldbank.org/etools/docs/library/239333/Porteous%5FEnabling EnviMobileBankAfrica.pdf](http://info.worldbank.org/etools/docs/library/239333/Porteous%5FEnabling%5FEnviMobileBankAfrica.pdf).
- Rangaswamy, R. (2007a). ICT for development and commerce: a case study of Internet cafes in India. Paper presented to the 9th International conference on Social Implications of Computers in Developing Countries. Sao Paulo, Brazil. May. Retrieved August 10, 2007 from <http://research.microsoft.com/users/nimmir>.
- Rangaswamy, R. (2007b). Representing the Non-formal: the Businesses of Internet cafes in India. EPIC 2007 proceedings. Retrieved March 7, 2008, from <http://research.microsoft.com/users/nimmir/Papers/Shared%20computing/EpicPaper2007RangaswamyFinalRevised%20.doc>.
- Rangaswamy, R. (2007c). Representing the Non-formal: the Businesses of Internet cafes in India. EPIC 2007 proceedings. Retrieved March 7, 2008, from <http://research.microsoft.com/users/nimmir/Papers/Shared%20computing/EpicPaper2007RangaswamyFinalRevised%20.doc>.
- Raveendran, G. (2006). Estimation of informal Employment in India. New Delhi: Expert Group on Informal Statistics (Delhi Group). Paper No. 03. Retrieved July 9, 2007, from <http://www.mospi.nic.in/Manual%2003.doc>.
- Republic of Rwanda. (2004). *Rwanda Vision 2020*. Kigali: Ministry of Finance and Economic Planning. Retrieved September 21, 2009, from <http://www.delrwa.ec.europa.eu/en/downloads/Rwanda%20Gov%20Dev%20Policy%20Documents/Vision%202020%20Latest.pdf>.
- Roy, M., & Wheeler, D. (2006). A Survey of Microenterprise in Urban West Africa: Drivers Shaping the Sector. *Development in Practice*, 16 (5):452–464.
- Rufaro, E., Chiware, T., & Dick, A. (2008). Information needs and information seeking patterns of small, medium and micro-enterprises in Namibia. *Information Development*, 24(1), 24–36.
- Sharma, S. (2007). From Information Village Research Project to Mission 2007 to Grameen Gyan Abhiyan (Rural Knowledge Movement): see it growing. Telecentre.org News. Retrieved April 2, 2008 from <http://www.telecentre.org/en/news.detail/39138>.

- Sirsalewala, M. (2005). Fixed Phone: The fixed line unplugged. Voice & Data: Gateway to Indian Communications Industry. V&D100–2005. Retrieved May 21, 2007, from <http://voicendata.ciol.com/content/vNd100/2005/105061351.asp>.
- Slater, D., & Tacchi, J. (2005). ICT Innovations for Poverty Reduction. United Nations Educational, Scientific and Cultural Organization, Asia Pacific Regional Bureau for Communication and Information, New Delhi.
- Souter, D., Garforth, C., Jain, R., Mascarenhas, O., McKemey, K., & Scott, N. (2005). The Economic Impact of Telecommunication on Rural Livelihoods and Poverty Reduction: A study of rural communities in India (Gujarat), Mozambique and Tanzania. Retrieved February 20, 2008, from <http://www.telafrica.org/R8347/files/pdfs/FinalReport.pdf>.
- Srivastava, R. (2005). The informal sector and urban poverty. Infochange Urban India. January 5. Retrieved August 24, 2007 from http://www.infochangeindia.org/urban_india_04.jsp.
- Stork, C., & Stork, M. (2008). ICT Household Survey Methodology & Fieldwork: *Towards Evidence-based ICT Policy and Regulation*, 1(1): 1–56. Retrieved April 5, 2010, from <http://www.researchictafrica.net/>.
- Telecom Regulatory Authority of India (2008). The Indian Telecom Services Performance Indicators July-September 2007. New Delhi: TRAI. Retrieved March 6, 2008, from <http://www.traigov.in/traigov/upload/Reports/38/report1jan08.pdf>.
- Thas, A., Ramilo, C., & Cinco, C. (2007). Gender and ICT. UNDP-APDIP, Elsevier.
- The Economist (2009). Mobile marvels: A special report on telecoms in emerging markets. September 24. Retrieved September 26, 2009 from http://www.economist.com/specialreports/displayStory.cfm?story_id=14483896.
- The New York Times (2009). In Rural Africa, a Fertile Market for Mobile Phones. October 5. Retrieved October 6, 2009 from <http://www.nytimes.com/2009/10/06/science/06uganda.html?scp=2&sq=mobile%20phones&st=cse>.
- TRAI (2010) Information Note to the Press, Press Release No. 20 /2010, Retrieved May 4, 2010, from <http://www.traigov.in/WriteReadData/traigov/upload/PressReleases/732/pr26apr10no20.pdf>.
- United Nations (2009). The Millennium Development Goals Report 2009. Retrieved August 19, 2009, from http://www.un.org/millenniumgoals/pdf/MDG_Report_2009_ENG.pdf.
- United Nations Conference on Trade and Development (2006). Information Economy Report 2006: The Development Perspective. New York and Geneva: United Nations (UNCTAD).
- United Nations Conference on Trade and Development (2007). Information Economy Report 2007–2008: Science and Technology for Development. New York and Geneva: United Nations (UNCTAD).

- United Nations Department of Economic and Social Affairs Population Division (2006). World Urbanization Prospects: The 2005 Revision. New York: United Nations Publication. Retrieved March 22, 2007, from <http://www.un.org/esa/population/publications/WUP2005/2005wup.htm>.
- United Nations Development Programme (2005). Information and Communication Technologies. UNDP/Japan Women in Development Fund. New York: United Nations. Retrieved April 15, 2007 from <http://www.undp.org/women/japan/highlights.shtml#ICT>.
- Vaidyanathan, R. (2004). Understanding the unorganised sector. The Hindu. Business Line. June 3. Retrieved August 15, 2007, from http://hrm.iimb.ernet.in/cpp/others/Understanding_the_unorganized_sector.pdf.
- Van Dijk, J. (2005). The Deepening Divide: Inequality in the Information Society. Sage Publications: Thousand Oaks, CA.
- Vodafone. (2009). India: The impact of mobile phones. Moving the debate forward. *The Policy paper Series*, No. 9. January. Retrieved April 10, 2010 from www.vodafone.com/etc/...policy_series.../public_policy_series_9.pdf
- World Bank. (2009). Information and Communications for Development 2009: Extending Reach and Increasing Impact. Washington, DC: World Bank.
- World Health Organization. (2005). Immunization Coverage Cluster Survey – Reference Manual. Department of Immunization, Vaccines and Biologicals, Geneva.
- Yates, S. (2007). *Worldwide PC Adoption Forecast, 2007 To 2015*. Cambridge, MA: Forrester Research. Retrieved February 28, 2008, from <http://www.forrester.com/Research/Document/Excerpt/0,7211,42496,00.html>.

Appendix A: Instructions to Field Interviewers

For Phase I Sample

Enterprises/businesses selected through strict random sampling

1. Please follow the instructions carefully.
2. Every interview will be cross checked and verified by the IITD research team.
3. Study examines how microenterprises/small businesses are using mobile phones, computers, and Internet cafés in Mumbai City.
4. We want you conduct interviews with businesses that employ hired workers in the range of 1–19. Hired workers are full-time employees who are working on a regular basis. Wife, husband, parents, own siblings, sons, and daughters should not be counted as hired workers.
5. Please conduct interviews with the owners of the enterprises. If the owner visits the business rarely, senior most worker or manager can be interviewed. The manager should know about the enterprise and should be responsible for day-to-day activities and finances.
6. Ask all the required questions to the respondent. Do not assume the answers or fill out the answers on your own.
7. For all open-ended questions, write the exact verbatim of the response.
8. Please conduct ten (10) interviews in each investigative (IV) unit of the National Sample Survey Organization which is given in a map format.
9. Ten interviews should be conducted among three categories of businesses/enterprises. Categories are divided on the basis of number of hired workers.
10. Please make sure that following quota (9 interviews) is filled in each investigative unit. The balance one interview can be done in any category.

Category of Businesses	Range of Hired Workers	Number of Interviews
A	1–5	2
B	6–9	5
C	10–19	2

11. Start your interview in the starting point given in the respective IV unit. Position yourself with your back to the traffic. If the start point is an intersection of two or more lanes or streets, position yourself with your back to the traffic on the largest lane or street.
12. Start out by walking to your left. Do the first interview at the first business that qualifies to be included in the study, irrespective of the enterprise category into which it falls.
13. For subsequent interviews, follow the instructions below:

Interview Number	Instruction (after each completed interview)
2	You are in the same side of the lane. Start walking in the direction opposite to the traffic flow. Look for your next respondent on the right side of the street or lane and keep walking till you meet the next qualified respondent.

Appendix A: Instructions to Field Interviewers

Interview Number	Instruction (after each completed interview)
3	Cross the road. Walk in the same direction the traffic is moving. Look for your next respondent on the left side of the street or lane and walk in that direction until you meet the next qualified respondent. If crossing is not possible, turn left and continue walking along the traffic. Enterprises are to your left side. Keep walking till you meet the next qualified respondent.
4	Walk in the direction the traffic is moving and look on the left hand side of the street or lane for the next qualified respondent. Keep walking till you meet the next qualified respondent.
5	Walk opposite to the flow of traffic. Walk on the right side of the street or lane until you meet the next qualified respondent.
6	Cross the road. Walk along with the flow of traffic. Walk on the left side of the street or lane until you meet the next respondent. If crossing is not possible, turn right and start walking along the traffic. Enterprises are to your left side. Keep walking till you meet the next respondent.
7	Walk in the direction the traffic is moving. Walk on the left side of the street until you meet the next qualified respondent.
8	Cross the road. Walk in the direction the traffic is moving. Walk on the left side of the street or lane until you meet the next respondent. If crossing is not possible, walk opposite to the traffic. Enterprises are to your right side. Keep walking till you meet the next respondent.
9	Cross the road. Walk in the direction opposite to the flow of traffic. Walk on the right side of the street or lane until you meet the next respondent. If crossing is not possible, walk along the traffic. Enterprises are to your left side. Keep walking till you meet the next respondent.

14. Once you finish the quotas, do not conduct interviews for that particular category. Consider the businesses that fall under completed category as non-existent and continue the random walk without breaking.
15. While doing random walks, if you cross an enterprise which is already covered, consider it as non-existent and continue random walking.
16. If you hit the boundary wall or dead end, turn and walk back until you reach an intersection and then turn left.
17. In 'T' point, turn right and continue walking.
18. If you are crossing a road which is "ONE WAY," walk in the opposite direction to the previous one.
19. When you hit a plus point, where four roads meet, walk straight.
20. Cross the road, ONLY if there are no road dividers or barriers.
21. When you are not crossing the road, you are in the same side of the lane / road.
22. When you hit the boundary of the IV unit, turn left to continue the random walk.
23. Please do not cross the boundaries of the IV unit.
24. If the businesses are located in a multi-storey set-up, consider the increasing numbers in the address of the enterprises as walking along the traffic. For example, moving from shop number 10A to 10B then 10C... is equal to walking along the traffic.

Appendix A: Instructions to Field Interviewers

25. If you are able to identify the gender of the respondent, please do not ask for that information.
26. Please mark the location of nine interviews in the IV unit / map given to you.
27. In the questionnaire, information in the square brackets, [], is instruction for you.
28. Please use the SHOW CARDS wherever instructed. If possible, leave the demonstration page in a place that the respondent can see it and refer to it.
29. If you have any doubts or face problems, please report to your supervisor immediately.

Appendix A: Instructions to Field Interviewers

For Phase II Sample

Women-owned enterprises selected through purposive sampling

1. Please follow the instructions carefully.
2. Every interview will be cross checked and verified by the IITD research team.
3. This study examines how women-owned micro enterprises are using mobile phones, computers, and Internet cafés in Mumbai City.
4. Please conduct interviews **ONLY** with businesses owned by women.
5. We want you conduct interviews with businesses that employ hired workers in the range of 1–19. Please conduct interviews with **ONLY** the owners of the enterprises.
6. Interviews **SHOULD NOT** be conducted with the managers.
7. For all open-ended questions, write the exact verbatim of the response.
8. Please conduct seven (7) interviews in each investigative unit of the National Sample Survey Organization which is given in a map format.
9. Seven interviews should be conducted among three categories of businesses/enterprises. Categories are divided on the basis of number of hired workers.
10. Please make sure that following quota (6 interviews) is filled in each investigative unit. The balance one interview can be done in any category.

Category of Businesses	Range of Hired workers	Number of Interviews
A	1–5	1
B	6–9	4
C	10–19	1

11. Start your interview in the starting point given in the respective investigative unit. On your left, enterprises/houses should be there. On your right, road should be there. Position yourself with your back to the traffic.
12. Start walking along the traffic. Do the first interview, irrespective of the enterprise category (A, B, and C).
13. Ask the respondent to refer you to at least one additional respondent who is a woman. Multiple recommendations are OK. If not referred, you can use your contacts or can inquire others.
14. Respondents from the Set I should **NOT** be repeated for the Set II.
- 15.** Please do not cross the boundary of the investigative unit.
16. Please mark the location of nine interviews in the investigative unit / map given to you.
17. In the questionnaire, information in the square brackets, [], is an instruction for you.
18. Use the **SHOW CARDS**, wherever instructed. If possible, leave the demonstration page in a place that the respondent can see it and refer to it.
19. If you have any doubts or face problems, please report to your supervisor immediately.
20. Ask all the required questions to the respondent. Do not assume the answers or fill out the answers on your own.

Appendix B: Supplementary Tables

TABLE B.1: Indexes and Reliabilities

Index	Questionnaire Items	Scoring	Alpha
Business Growth	<p>Compared to a year ago, has the annual income of this business increased, remained the same or decreased? By what percentage?</p> <p>How, if at all, have the recent Mumbai terrorist attacks affected this business? Compared to before the terrorist attacks, we are doing less business, we are doing more business, we are doing just about the same amount of business.</p>	<p>Change in percentage</p> <p>0 = less business 1 = no change 2 = more business</p>	0.54
Business Formality	<p>Is this business registered with the government? Does this business have a bank account? For maintaining the financial and business records of this business, which of the following statements is most applicable:</p> <ul style="list-style-type: none"> Financial accounts and business records are not kept for this business Accounts are written by hand but not given to an accountant Accounts and business records are written by hand and then given to an accountant Accounts and business records are kept in a computer located at home Accounts and business records are kept in a computer at this business. 	<p>0 = no records .5 = written records 1 = yes 1 = accountant</p>	0.64
Motivation	<p>My mobile phone helps me keep informed about prices and other business news. Having a mobile makes me more confident that this business will survive. My mobile helps me come and go without worrying about missing important business phone calls. Using my mobile makes it easier to stay in touch with my family and friends. Using my mobile helps me stay in touch with current customers. My mobile helps me stay in touch with other business people who have similar interests and problems like mine. Using a mobile makes me feel more connected to businesses in other parts of Mumbai. Having a mobile makes me feel up-to-date.</p>	<p>1 = strongly disagree 2 = disagree 3 = neither agree nor disagree 4 = agree 5 = strongly agree</p>	0.79

Appendix B: Supplementary Tables

Index	Questionnaire Items	Scoring	Alpha
Perceived social status and power	Because of my business, I am feeling more confident.	1 = strongly disagree	0.70
	Because of my business, I have gained respect among my friends and in my neighborhood.	2 = disagree	
	Despite my business, my parents do not feel especially proud of me (reversed).	3 = neither agree nor disagree	
	Because of my business, my parents-in-law are proud of me.	4 = agree	
	Despite my business, my opinions are not considered to be important in family decisions (reversed).	5 = strongly agree	
Total ICT access	Do you have/own a mobile phone? Personal computer? Laptop? Internet connection? Do you ever use external PCOs/STD booths for this business? Have you ever given mobile phones to your employees to use for business purposes? Do they ever use their personal mobile phones for business purposes? Does this business have computers in the workplace? Does the business have an Internet connection? Have you provided computers for the employees to use at work?	0 = no 1 = yes	0.61

TABLE B.2: Chow Test of Business Growth by Economic Sector

Industrial Sector	Model	Sum of Squares	df	Mean Square	F	Sig.
Manufacturing	1 Regression	1571.000	3	523.667	.	. ^b
	Residual	.000	0	.		
	Total	1571.000	3			
Services	1 Regression	1808.420	4	452.105	1.333	.264 ^c
	Residual	30873.413	91	339.268		
	Total	32681.833	95			
Trade	1 Regression	8433.733	4	2108.433	9.877	.000 ^d
	Residual	26255.767	123	213.462		
	Total	34689.500	127			

b. Predictors: (Constant), Totictaccess, Formality, SMEAN(MEmotivation)

c. Predictors: (Constant), Totictaccess, SMEAN(MEmotivation), Formality, Respect

d. Predictors: (Constant), Totictaccess, Respect, Formality, SMEAN(MEmotivation)

e. Dependent Variable: Business Growth

Appendix B: Supplementary Tables

TABLE B.3: Analysis of Variance for Length of Ownership of ICTs

	Sum of Squares	df	Mean Square	F
How many years ago did you first get a personal computer?				
Between groups	59.91	1	59.91	6.23*
Within groups	791.93	76	9.82	
Total	791.24	77		
How many years ago did you first get a laptop?				
Between groups	15.75	1	15.75	5.14*
Within groups	57.41	22	3.05	
Total	83.16	23		
How many years have you been using this [mobile] phone?				
Between groups	0.00	1	0.00	0.00
Within groups	2,504.63	486	5.36	
Total	2,504.63	487		

*p< 0.05

TABLE B.4: Cross-Tabulation of Change in Business after Terror Attacks and Income Change Categories for Microenterprises

Change in Income	Change in Business after Terror Attacks (%)			Total
	Less	Same	More	
Men owned/managed				
Declining	81	16	3	99
Unchanging	12	87	1	187
Growing	22	38	40	40
Women owned				
Declining	78	16	6	83
Unchanging	3	96	1	119
Growing	3	35	62	29

Appendix B: Supplementary Tables

TABLE B.5: Cross-Tabulation of Customers from Other Parts of Mumbai and Income Change Categories for Microenterprises Owned by Women

Change in Income	Customers from Other Parts of Mumbai (%)		Total	χ^2
	Yes	No		
Declining	69	31	83	6.80*
Unchanging	62	38	119	
Growing	41	59	29	

*p<.05

TABLE B.6: Cross-Tabulation of Customers from Outside Mumbai and Income Change Categories for Microenterprises Owned/Managed by Men

Change in Income	Customers from Outside Mumbai (%)		Total	χ^2
	Yes	No		
Declining	13	87	100	6.27*
Unchanging	7	93	188	
Growing	20	80	40	

TABLE B.7: Cross-Tabulation of Mobile Ownership and Income Change Categories for Microenterprises Owned/Managed by Men

Change in Income	Mobile Ownership (%)		Total	χ^2
	Yes	No		
Unchanging or declining	88	11	288	4.92*
Growing	100	0	40	

* p = 0.08

Appendix B: Supplementary Tables

TABLE B.8: Cross-Tabulation of Mobile Ownership and Income Change Categories for Microenterprises Owned by Women

Change in Income	Mobile Ownership (%)		Total	χ^2
	Yes	No		
Declining	94	6	83	9.47**
Unchanging	82	18	119	
Growing	97	3	29	

**p<.01

TABLE B.9: Cross-Tabulation of English Writing Ability and Income Change Categories for Microenterprises Owned/Managed by Men

Change in Income	English Writing Ability (%)		Total	χ^2
	Yes	No		
Declining	66	34	100	7.05*
Unchanging	51	49	188	
Growing	65	35	40	

TABLE B.10: Cross-Tabulation of Marathi Language Abilities and Income Change Categories for Microenterprises Owned by Women

Change in Income	Response Category (%)		Total	χ^2
	Yes	No		
Marathi speaking ability				
Declining	57.8	42.2	83	13.90**
Unchanging	81.5	18.5	119	
Growing	75.9	24.1	29	
Marathi reading ability				
Declining	56.6	43.4	83	15.93**
Unchanging	81.5	18.5	119	
Growing	79.3	20.7	29	
Marathi writing ability				
Declining	55.4	44.6	83	14.30**
Unchanging	79.0	21.0	119	
Growing	79.3	20.7	29	

**p<0.05

Appendix C: Survey Instruments

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

Part A of the survey instrument gathered information on ICT ownership at the enterprises and home, enterprise details, and uses and gratification items for ICTs. Part B focused on how ICTs are used for business and personal purposes. Part C collected background information of the respondents. In part A, there was also a small section exclusively for managers, who were interviewed if the owner of the microenterprise was unavailable.

Appendix C.2: Phase II Fieldwork, Female Owners

The subsection on managers from the Phase I questionnaire was removed from Part A, since all eligible female respondents were microenterprise owners. Some gender-specific questions were added in both parts A and C, including the questions about the number of working hours (both in the microenterprise and at home), number of children, the support system available at home, the gender of the business contacts, and respondent perceptions of their social status (see Appendix C.2 for details). Part B of the questionnaire for female microentrepreneurs was unchanged

Appendix C.3: Phase III Fieldwork, Exploratory Sample

The exploratory sample consisted of both women and men who used workplace computers or who went to Internet cafés for business purposes. The questionnaire from Phase I was modified by deleting all questions about ICT access and use from parts A and B *except* for those dealing with workplace computers or Internet cafés. Other items dealing with business computers and Internet cafés that appeared later in the Phase I questionnaire were moved forward in this version

Appendix C.4: Show Cards

A set of five “show cards” or prompts were created to make it easier for respondents to give valid and reliable answers to Likert-scale and related survey questions. At the appropriate time in each interview, the field interviewer displayed the relevant card to the respondent.



Indian Institute of Technology Delhi

MAIN / SET 10

Greetings!

We are researching how small businesses in Mumbai use mobile phones, computers, and the Internet. You have been scientifically chosen to participate. We would very much like to hear about your experiences. This research is supported by IIT-Delhi. We promise not to identify you in any way in our final report. What we find out will help small businesses like yours.

To acknowledge your valuable help and input, we are pleased to give you an honorarium of Rs. 600. This honorarium is contingent on completing the survey, but not on the responses themselves. Your identity will remain confidential. Therefore, we encourage you to respond freely and honestly to the questions that will follow. We would be happy to provide further details about this research, if you have any questions.

Thank you,

Yours truly,

Dr. P. Vigneswara Ilavarasan

I, _____ of _____ (Enterprise name, if any) hereby agree to participate in this survey and to provide the information on a voluntary basis.

I received Rs. 600 (Six hundred only) in cash as an honorarium from the Indian Institute of Technology Delhi.

Signature with date

Name & mobile number, if any

Please attach proof of cash receipt (Letterhead / Visiting Card / Rubber Stamp), signed.

For further details:

Dr. P. Vigneswara Ilavarasan, Assistant Professor
Department of Humanities & Social Sciences, IIT Delhi
Hauz Khas, New Delhi. 110 016
Ph: 011-26591374, Fax: 011-26596509 , E-mail: vignesh@hss.iitd.ac.in

IV No. Block No. Interview SI No. ID No.

Date of Interview ___/___/2009 Time of Interview : Start : _____ End : _____

Interviewer's sign & date : _____ Reviewer's sign & date : _____

PART A

SECTION 1 ONLY FOR MANAGERS

[For managers only. Owners should begin at SECTION 2]

1. Please tell me about your responsibilities in this business:

a. Are you responsible for hiring and managing the workers?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Do you handle cash transactions on your owner's behalf?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Do you interact with customers more than the owner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Do you interact with the suppliers more than the owner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

2. Owner is: [Tick one, do not ask]

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>
Transsexual	<input type="checkbox"/>

3. How frequently does the owner visit this workplace?

a. Nearly every day	<input type="checkbox"/>
b. A few days every week	<input type="checkbox"/>
c. Once a week	<input type="checkbox"/>
d. Once a month	<input type="checkbox"/>
e. Less often than once a month	<input type="checkbox"/>
f. Never	<input type="checkbox"/>

4. In the owner's absence, how frequently are you in contact him or her?

a. Several times a day	<input type="checkbox"/>
b. Once a day	<input type="checkbox"/>
c. Once every three to five days	<input type="checkbox"/>
d. Once a week	<input type="checkbox"/>
e. Once a month	<input type="checkbox"/>
f. Less often than once a month	<input type="checkbox"/>

5. In the owner's absence, what are the one or two ways you most often contact the owner? Do you: [Tick up to two responses]

a. Call the owner's landline phone	<input type="checkbox"/>
b. Call the owner's mobile phone	<input type="checkbox"/>
c. Give the owner a "missed call" ¹	<input type="checkbox"/>
d. Send the owner SMS ² or text messages	<input type="checkbox"/>
e. Send the owner e-mails	<input type="checkbox"/>
f. Chat with the owner in the Internet	<input type="checkbox"/>
g. Other: _____	<input type="checkbox"/>

¹ A missed call is a way someone signals you by calling your phone, letting it ring for a moment or two, and then hanging up.

² SMS or text message is a short written message sent between mobile phones.

6. Are you related to the owner?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q6A, else go to Q7]

- 6A. How are you related to the owner?

a. The owner is my maternal/paternal uncle/aunt.	<input type="checkbox"/>
b. The owner is my cousin from mother's/father's side.	<input type="checkbox"/>
c. The owner is my distant relative.	<input type="checkbox"/>
d. The owner is from my caste.	<input type="checkbox"/>
e. Other: _____	<input type="checkbox"/>

7. How many of the hired workers are the owner's relatives? _____ workers
[Hired workers are full-time employees who are working on a regular basis. Husband, wife, parents, own siblings, sons, and daughters should not be counted as hired workers. More distant relatives who work in the business and who are paid should be included in this count.]

Continue on next page

**SECTION 2
ONLY FOR OWNERS**

8. Do you have any relatives working in this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES go to Q8A, else go to Q9]

8A. How many of the paid workers are your relatives? _____

9. Is this the only business you own?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>
c. Refused	<input type="checkbox"/>

[If NO ask Q9A and Q9B, else go to SECTION 3]

9A. What are your other businesses? **[Probe for type of business]**

9B. To manage your other businesses, do you:

a. Make regular visits in person	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Use a mobile phone	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Use e-mail	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Use Internet online chatting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

**SECTION 3
OPINION ON MOBILES
[For both owners and managers]**

10. Do you have/own a mobile phone?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q11, else go to SECTION 4]

11. Please tell how well each of the following statements describes your experience with your mobile phone. **[Use SHOW CARD 1]**

a. My mobile hardly ever helps this business make more money.	_____
b. I get less work done because my mobile phone interferes.	_____
c. Using a mobile hardly ever helps this business save money.	_____
d. My mobile helps me keep informed about prices and other business news.	_____
e. Using my mobile to go online to the Internet does not make it any easier to do business.	_____
f. Having a mobile makes me more confident that this business will survive.	_____
g. My mobile helps me come and go without worrying about missing important business phone calls.	_____
h. Using my mobile makes it easier to stay in touch with my family and friends.	_____
i. Using my mobile does not help me stay in touch with suppliers for this business.	_____
j. Using my mobile helps me stay in touch with current customers.	_____
k. My mobile does not help me find new customers.	_____
l. My mobile helps me stay in touch with other business people who have similar interests and problems like mine.	_____
m. Using a mobile makes me feel more connected to businesses in other parts of Mumbai.	_____
n. Having a mobile does not make me feel especially important.	_____
o. Having a mobile makes me feel up-to-date.	_____
p. Having a mobile does not make me any more confident that this business will grow.	_____

**SECTION 4
COMPUTERS AT HOME**

Now we would like to know about your computers at home.

12. Please tell me whether you have the following at home:

a. Personal computer [If YES ask Q13a]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Laptop [If YES ask Q13b]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Internet connection [If YES ask Q13c]	<input type="checkbox"/> Yes	<input type="checkbox"/> No

[If NO to ALL (a, b, and c), go to Section 5]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

13. Please tell me how many years ago did you get first get a: **[Ask only applicable questions]**

a. Personal computer	_____
b. Laptop	_____
c. Internet connection	_____

14. **[Ask only if YES to Q12a]** Do you use your computer at home for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

15. **[Ask only if YES to Q12b]** Do you bring your home laptop to work to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

16. **[Ask only if YES to Q12c]** Do you connect to the Internet on your home computer to do business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

17. **[Ask only if applicable]** What specific things do you do with computers at home and Internet?
[Probe: Anything else?]

SECTION 5 ENTERPRISE/BUSINESS DETAILS

18. How many years ago was this business started?
_____ years

19. How many hired workers does this business have?
_____ **[Note: Hired workers are full-time employees who are working on regular basis. Husband, wife, parents, own siblings, sons, and daughters should NOT be counted as hired workers. More distant relatives who work in the business and who are paid should be included in this count.]**

20. Out of the total hired workers, how many are women? _____

21. Are there any women among:

a. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No

22. Which of the following categories best describes this business?

a. Manufacturing	<input type="checkbox"/>
b. Services	<input type="checkbox"/>
c. Trade	<input type="checkbox"/>
d. Other: _____	<input type="checkbox"/>

23. Please describe your product/services/trade:

24. How do you describe customers of this business?
[Mark all that apply]

a. Customers are people who walk-in	<input type="checkbox"/>
b. Customers are from other parts of Mumbai	<input type="checkbox"/>
c. Customers are from outside Mumbai.	<input type="checkbox"/>
d. Customers are from outside India	<input type="checkbox"/>
e. Customers come through my sales representatives	<input type="checkbox"/>
f. Customers come through the mobile phone	<input type="checkbox"/>
g. Customers come through e-mail	<input type="checkbox"/>
h. Customers are through the retail vendors	<input type="checkbox"/>
i. Other: _____	<input type="checkbox"/>

25. Do you have landline phones at this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q25A, else go to Q26]

- 25A.** How many landline phones do you have?

26. Do you ever use external PCOs/STD booths for this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q26A, else go to Q27]

- 26A.** Why do you use PCOs/STD booths?

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

27. Do you ever use your friends'/others' **landline** phones to receive calls for this business?

a. Yes	<input type="checkbox"/>
a. No	<input type="checkbox"/>

[If YES ask Q27A, else go to Q28]

27A. Why do you use friends'/others' landlines to receive calls?

28. Do you ever use your friends'/others' **mobile** phones to receive calls for this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q28A, else go to Q29]

28A. Why do you use friends'/others' mobile phones to receive calls?

29. Have you ever given mobile phones to your employees to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

30. Please tell me the main reasons for not providing OR providing mobile phones to your employees.

31. Do your employees have personal mobile phones?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q31A and Q31B, else go to SECTION 6]

31A. Do they ever use their personal mobile phones for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

31B. Do you pay the phone bills for your employees when they use their own mobiles for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

SECTION 6
COMPUTERS IN THE BUSINESS
WORKPLACE.

32. Does this business have computers in the workplace?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q33, else skip to SECTION 8]

33. How many computers does this business have now? _____

34. Please tell me the details about your computers. How many years ago was the first computer bought for this business? _____ years

35. Why was the first computer bought? **[Probe: Any other reasons?]**

36. Why do you use computers at work? **[Probe: Any other reason?]**

37. Who uses the business computer(s)? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

38. Please answer the following questions about your first two computers.

	Computer 1		Computer 2	
	Yes	No	Yes	No
a. Is it branded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Is this computer connected to the Internet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Does it have CD/ DVD ROM facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Does it have USB port (to connect pen/ external drive) in the front?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Does it have the Microsoft office software (Word, Excel)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Does it have other software like Tally, CAD, ERP, Inventory, Adobe Photoshop?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Did you buy it "second-hand"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Have you provided computers for the employees to use at work?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q39A, else go to Q40]

39A. Please tell me the main reasons for providing computers for your employees.

40. **[Only ask if the business is an Internet café or desktop publishing]** If your computers are used by your customers, for what purpose(s) are they used?

- a. _____
- b. _____
- c. _____

41. Does this business have an e-mail address?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q41A and 41B, else go to Q42]

41A. For how many years has this business had an e-mail ID: _____ years

41B. Why did you set up an e-mail address for this business?

42. Does this business have a permanent website online?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q42A, B, C, and D, else go to SECTION 7]

42A. What is the address of your website?

42B. For how many years have you had the website? _____ years

42C. Why was a website created for this business?

42D. Do you update the website regularly?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

SECTION 7 OPINION ON WORK COMPUTERS

[Go to next section if computer is NOT used in the business]

43. I am going to read you some statements about work computers and I would like you to tell me how much you agree or disagree with each. **["Work computers" are both computers kept at business and computers at home but also used for business purposes.] [Use SHOW CARD 1]**

a. My work computer hardly ever helps this business make more money.	_____
b. I get less work done because my work computer interferes.	_____
c. Using a work computer hardly ever helps this business save money.	_____
d. My work computer helps me keep informed about prices and other business news.	_____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

e.	Using a work computer to go online to the Internet does not make it any easier to do business	_____
f.	Having a work computer makes me more confident that this business will survive.	_____
g.	A work computer helps me come and go without worrying about missing important business phone calls.	_____
h.	Using my work computer makes it easier to stay in touch with my family and friends.	_____
i.	Using a work computer does not help me stay in touch with the suppliers of this business.	_____
j.	Using a work computer helps me stay in touch with the current customers.	_____
k.	A work computer does not help to find new customers.	_____
l.	A work computer helps me stay in touch with other business people who have similar interests and problems like mine	_____
m.	Using a work computer makes me feel more connected to businesses in other parts of Mumbai.	_____
n.	Having a work computer does not make me feel especially important.	_____
o.	Having a work computer makes me feel up-to-date.	_____
p.	Having a work computer does not make me any more confident that this business will grow.	_____

SECTION 8
INTERNET & INTERNET CAFE

44. Does the business have an Internet connection?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q45, else go to Q50]

45. How many years ago did this business first get an Internet connection? _____ years

46. Why did this business first get an Internet connection?

47. Does the business have wireless Internet facility?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

48. Who uses the Internet at work? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

49. What are the main reasons you use the Internet at work? **[Probe: Any other reasons?]**

50. Do you ever use computers at an Internet café for business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q51, else go to SECTION 10]

51. For how many years you have been using Internet cafés for business purposes? _____ years

52. Why did you first start going to Internet cafés for business purposes?

53. Approximately many kilometers away from this business is the Internet café you use?

_____ KM

54. Who uses Internet café for this business? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Other workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

55. Why do you use the Internet café for business now? **[Probe: Any other reasons?]**

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

56. Please give information on the Internet cafés that you use:

a. The Internet café is a branch of Internet café chains. (Example: Sify, Webworld of Reliance)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. The Internet café is an independent private enterprise.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. The Internet café is run by the government.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. The Internet café is run by a non-governmental organization.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

l. The computers at the Internet café help me stay in touch with other business people who have similar interests and problems like mine.	_____
m. Using a computer at the Internet café makes me feel more connected to businesses in other parts of Mumbai.	_____
n. Using a computer at the Internet café does not make me feel especially important.	_____
o. Using a computer at the Internet café makes me feel up-to-date.	_____
p. Using a computer at the Internet café does not make me any more confident that this business will grow.	_____

SECTION 9

OPINION ON INTERNET CAFES

57. Please respond to the following statements about Internet cafés by telling me how much you agree or disagree with each. [Use **SHOW CARD 1**]

a. The computers at the Internet café hardly ever help this business make more money.	_____
b. I get less done at work because I use a computer at the Internet café.	_____
c. Using a computer at the Internet café hardly ever helps this business to save money.	_____
d. The computers at the Internet café help me keep informed about prices and other business news.	_____
e. Using a computer at the Internet café to go online to the Internet makes it easier to do business.	_____
f. Using a computer at the Internet café makes me more confident that this business will survive.	_____
g. The computers at the Internet café help me come and go without worrying about missing important business calls.	_____
h. Using a computer at the Internet café makes it easier to stay in touch with my family and friends.	_____
i. Using a computer at the Internet café does not help me stay in touch with the suppliers of this business.	_____
j. Using a computer at the Internet café helps me stay in touch with current customers.	_____
k. The computers at the Internet café do not help me find new customers.	_____

SECTION 10

BUSINESS GROWTH

58. Compared to a year ago, has the annual income of this business:

a. Increased [By what percentage?]	<input type="checkbox"/> Yes, by _____%
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [By what percentage?]	<input type="checkbox"/> Yes, by _____%

59. Why do you think the annual income of the business has increased/decreased/remained the same?

60. Compared to a year ago, has the number of hired workers:

a. Increased [How many?]	<input type="checkbox"/> Yes, by _____
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [How many?]	<input type="checkbox"/> Yes, by _____

61. Why has the number of hired workers increased/decreased/stayed the same?

[If the business has increased ask Q62, else go to Q63]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

62. Please say whether you agree or disagree with the statements below.

a. Having a mobile phone has helped this business grow.	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No
b. Having a work computer has helped this business grow.	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No
c. Going to the Internet cafes has helped this business grow.	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No

63. Is this business registered with the government?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q 63A and Q63B, else go to Q64]

63A. What kind of registration do you have?

63B. How many years ago did you register?
_____ years

64. Does this business have a PAN number?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

65. Does this business have a bank account?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q65A, else go to Q66.]

65A. How many years ago did you get that bank account? _____ years

66. For maintaining the financial and business records of this business, which of the following statements is **most** applicable? **[Select only one]**

a. Financial accounts and business records are not kept for this business.	<input type="checkbox"/>
b. Accounts are written by hand but not given to an accountant.	<input type="checkbox"/>
c. Accounts and business records are written by hand and then given to an accountant.	<input type="checkbox"/>
d. Accounts and business records are kept in a computer located at home.	<input type="checkbox"/>
e. Accounts and business records are kept in a computer at this business.	<input type="checkbox"/>

67. How, if at all, have the recent Mumbai terrorist attacks affected this business? Compared to before the terrorist attacks:

a. We are doing less business.	<input type="checkbox"/>
b. We are doing more business.	<input type="checkbox"/>
c. We are doing just about the same amount of business.	<input type="checkbox"/>

[Use SHOW CARD 2 for Q68–70]

68. Compared to before the terrorist attacks in Mumbai, are you using your mobile phone for business more, less, or about the same amount?

69. Compared to before the terrorist attacks, are you using a work computer for business more, less, or about the same amount? _____

70. Compared to before the attacks, are you going to an Internet café for business more, less, or about the same amount? _____

71. Compared to before the terrorist attacks, are you using your mobile phone to talk with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

72. Compared to before the terrorist attacks, are you using work computer to communicate with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

73. Compared to before the terrorist attacks, are you using Internet café to talk with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

Please go to PART B

PART B

SECTION A MOBILE USE

A1.1 How often do you use the mobile to call customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA1.2, else go to QA1.3]

A1.2 Why don't you use the mobile to call customers?

[Go to QA2.1]

A1.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call customers? **[Use SHOW CARD 4]** _____

A1.4 Why are you using the mobile to call customers?

A1.5 About how many days in the past week did you use the mobile to call customers? **[Use SHOW CARD 5]** _____

A2.1 How often do you use the mobile to call employees? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA2.2, else go to QA2.3]

A2.2 Why don't you use the mobile to call employees?

[Go to QA3.1]

A2.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call employees? **[Use SHOW CARD 4]** _____

A2.4 Why are you using the mobile to call employees?

A2.5 About how many days in the past week did you use the mobile to call employees? **[Use SHOW CARD 5]** _____

A3.1 How often do you use the mobile to call suppliers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA3.2, else go to QA3.3]

A3.2 Why don't you use the mobile to call suppliers?

[Go to QA4.1]

A3.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call suppliers? **[Use SHOW CARD 4]** _____

A3.4 Why are you using the mobile to call suppliers?

A3.5 About how many days in the past week did you use the mobile to call the suppliers? **[Use SHOW CARD 5]** _____

A4.1 How often do you use the mobile to call business-people in other parts of Mumbai? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA4.2, else go to QA4.3]

A4.2 Why don't you use the mobile to call business-people in other parts of Mumbai?

[Go to QA5.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A4.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call business-people in other parts of Mumbai? **[Use SHOW CARD 4]**

A4.4 Why are you using the mobile to call business-people in other parts of Mumbai?

A4.5 About how many days in the past week did you use the mobile to call business-people in other parts of Mumbai? **[Use SHOW CARD 5]**

A5.1 How often do you use the mobile to call business-people in other parts of India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA5.2, else go to QA5.3]

A5.2 Why don't you use the mobile to call business-people in other parts of India?

[Go to QA6.1]

A5.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call business-people in other parts of India? **[Use SHOW CARD 4]**

A5.4 Why are you using the mobile to call business-people in other parts of India?

A5.5 About how many days in the past week did you use the mobile to call business-people in other parts of India? **[Use SHOW CARD 5]**

A6.1 How often do you use the mobile to call business-people outside India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA6.2, else go to QA6.3]

A6.2 Why don't you use the mobile to call business-people outside India?

[Go to QA7.1]

A6.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call business-people outside India? **[Use SHOW CARD 4]**

A6.4 Why are you using the mobile to call business-people outside India?

A6.5 About how many days in the past week did you use the mobile to call business-people outside India? **[Use SHOW CARD 5]**

A7.1 How often do you use the mobile to call your family and friends? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA7.2, else go to QA7.3]

A7.2 Why don't you use the mobile to call your family and friends?

[Go to QA8.1]

A7.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to call your family and friends? **[Use SHOW CARD 4]** _____

A8.1 How often do you use the mobile to send SMS text messages to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA8.2, else go to QA8.3]

A8.2 Why don't you use the mobile to send SMS text messages to your family and friends?

[Go to QA9.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A8.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to your family and friends? **[Use SHOW CARD 4]**

A9.1 How often do you use the mobile to take pictures of your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask Q9.A2, else go to QA9.3]

A9.2 Why don't you use the mobile to take pictures of your family and friends?

[Go to QA10.1]

A9.3 About how many days in the past week did you use the mobile to take pictures of your family and friends? **[Use SHOW CARD 5]**

A10.1 How often do you use the mobile to send e-mail to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA10.2, else go to QA10.3]

A10.2 Why don't you use the mobile to send e-mail to your family and friends?

[Go to QA11.1]

A10.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to your family and friends? **[Use SHOW CARD 4]** _____

A11.1 How often do you use the mobile to send SMS text messages to customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA11.2, else go to QA11.3]

A11.2 Why don't you use the mobile to send SMS text messages to customers?

[Go to QA12.1]

A11.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to customers? **[Use SHOW CARD 4]**

A11.4 Why are you using the mobile to send SMS text messages to customers?

A11.5 About how many days in the past week did you use the mobile to send SMS text messages to the customers? **[Use SHOW CARD 5]**

A12.1 How often do you use the mobile to send SMS text messages to employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA12.2, else go to QA12.3]

A12.2 Why don't you use the mobile to send SMS text messages to employees?

[Go to QA13.1]

A12.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to employees? **[Use SHOW CARD 4]**

A12.4 Why are you using the mobile to send SMS text messages to employees?

A12.5 About how many days in the past week did you use the mobile to send SMS text messages to employees? **[Use SHOW CARD 5]**

A13.1 How often do you use the mobile to send SMS text messages to suppliers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA13.2, else go to QA13.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A13.2 Why don't you use the mobile to send SMS text messages to suppliers?

[Go to QA14.1]

A13.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to suppliers? **[Use SHOW CARD 4]**

A13.4 Why are you using the mobile to send SMS text messages to suppliers?

A13.5 About how many days in the past week did you use the mobile to send SMS text messages to suppliers? **[Use SHOW CARD 5]**

A14.1 How often do you use the mobile to send SMS text messages to business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA14.2, else go to QA14.3]

A14.2 Why don't you use the mobile to send SMS text messages to business-people in other parts of Mumbai?

[Go to QA15.1]

A14.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____

A14.4 Why are you using the mobile to send SMS text messages to business-people in other parts of Mumbai?

A14.5 About how many days in the past week did you use the mobile to send SMS text messages to business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____

A15.1 How often do you use the mobile to send SMS text messages to business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA15.2, else go to QA15.3]

A15.2 Why don't you use the mobile to send SMS text messages to business-people in other parts of India?

[Go to QA16.1]

A15.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send SMS text messages to business-people in other parts of India? **[Use SHOW CARD 4]** _____

A15.4 Why are you using the mobile to send SMS text messages to business-people in other parts of India?]

A15.5 About how many days in the past week did you use the mobile to send SMS text messages to business-people in other parts of India? **[Use SHOW CARD 5]** _____

A16.1 How often do you use the mobile to take pictures for this business? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA16.2, else go to QA16.3]

A16.2 Why don't you use the mobile to take pictures for this business?

[Go to QA17.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A16.3 About how many days in the past week did you use the mobile to take pictures for this business? **[Use SHOW CARD 5]** _____

A16.4 Why are you using the mobile to take pictures for this business?

A16.5 About how many days in the past week did you use the mobile to take pictures for this business? **[Use SHOW CARD 5]** _____

A17.1 How often do you use the mobile to send e-mail to customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA17.2, else go to QA17.3]

A17.2 Why don't you use the mobile to send e-mail to customers?

[Go to QA18.1]

A17.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to customers? **[Use SHOW CARD 4]** _____

A17.4 Why are you using the mobile to send e-mail to customers?

A17.5 About how many days in the past week did you use the mobile to send e-mail to customers? **[Use SHOW CARD 5]**

A18.1 How often do you use the mobile to send e-mail to employees? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA18.2, else go to QA18.3]

A18.2 Why don't you use the mobile to send e-mail to employees?

[Go to QA19.1]

A18.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to employees? **[Use SHOW CARD 4]** _____

A18.4 Why are you using the mobile to send e-mail to the employees?

A18.5 About how many days in the past week did you use the mobile to send e-mail to -employees? **[Use SHOW CARD 5]** _____

A19.1 How often do you use the mobile to send e-mail to suppliers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA19.2, else go to QA19.3]

A19.2 Why don't you use the mobile to send e-mail to suppliers?

[Go to QA20.1]

A19.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to suppliers? **[Use SHOW CARD 4]** _____

A19.4 Why are you using the mobile to send e-mail to -suppliers?

A19.5 About how many days in the past week did you use the mobile to send e-mail to suppliers? **[Use SHOW CARD 5]** _____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A20.1 How often do you use the mobile to send e-mail to business-people in other parts of Mumbai? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QA20.2, else go to QA20.3]

A20.2 Why don't you use the mobile to send e-mail to business-people in other parts of Mumbai?

[Go to QA21.1]

A20.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to business-people in other parts of Mumbai? [Use SHOW CARD 4] _____

A20.4 Why are you using the mobile to send e-mail to business-people in other parts of Mumbai?

A20.5 About how many days in the past week did you use the mobile to send e-mail to business-people in other parts of Mumbai? [Use SHOW CARD 5] _____

A21.1 How often do you use the mobile to send e-mail to business-people in other parts of India? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QA21.2, else go to QA21.3]

A21.2 Why don't you use the mobile to send e-mail to business-people in other parts of India?

[Go to QA22.1]

A21.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to business-people in other parts of India? [Use SHOW CARD 4] _____

A21.4 Why are you using the mobile to send e-mail to business-people in other parts of India?

A21.5 About how many days in the past week did you use the mobile to send e-mail to business-people in other parts of India? [Use SHOW CARD 5] _____

A22.1 How often do you use the mobile to send e-mail to business-people outside India? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QA22.2, else go to QA22.3]

A22.2 Why don't you use the mobile to send e-mail to business-people outside India?

[Go to QA23.1]

A22.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send e-mail to business-people outside India? [Use SHOW CARD 4] _____

A22.4 Why are you using the mobile to send e-mail to business-people outside India?

A22.5 About how many days in the past week did you use the mobile to send e-mail to business-people outside India? [Use SHOW CARD 5] _____

A23.1 How often do you use the mobile to browse the Internet for information about prices and other business news? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QA23.2, else go to QA23.3]

A23.2 Why don't you use the mobile to browse the Internet for information about prices and other business news?

[Go to QA24.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A23.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to browse the Internet for information about prices and other business news? **[Use SHOW CARD 4]** _____

A23.4 Why are you using the mobile to browse the Internet for information about prices and other business news?

A23.5 About how many days in the past week did you use the mobile to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]** _____

A24.1 How often do you download new programs for the mobile to use in this business? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA24.2, else go to QA24.3]

A24.2 Why don't you download new programs for the mobile to use in this business?

[Go to QA25.1]

A24.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to download new programs for the mobile to use in this business? **[Use SHOW CARD 4]** _____

A24.4 Why are you using the mobile to download new programs for the mobile to use in this business?

A24.5 About how many days in the past week did you use the mobile to download new programs for the mobile to use in this business? **[Use SHOW CARD 5]** _____

A25.1 How often do you use the mobile to keep track of supplies? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA25.2, else go to QA25.3]

A25.2 Why don't you use computer programs already on the mobile to keep track of the supplies?

[Go to QA26.1]

A25.3 Compared to a year ago, would you say you are using computer programs already on the mobile more or less or about the same amount to keep track of supplies? **[Use SHOW CARD 4]**

A25.5 Why are you using computer programs already on the mobile to keep track of supplies?

A25.6 About how many days in the past week did you use computer programs already on the mobile to keep track of supplies? **[Use SHOW CARD 5]**

A26.1 How often do you use computer programs already on the mobile to keep track of inventory? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA26.2, else go to QA26.3]

A26.2 Why don't you use computer programs already on the mobile to keep track of the inventory?

[Go to QA27.1]

A26.4 Compared to a year ago, would you say you are using computer programs already on the mobile more or less or about the same amount to keep track of inventory? **[Use SHOW CARD 4]**

A26.5 Why are you using computer programs already on the mobile to keep track of inventory?

A26.6 About how many days in the past week did you use computer programs already on the mobile to keep track of inventory? **[Use SHOW CARD 5]**

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A27.1 How often do you use computer programs already on the mobile to keep track of customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA27.2, else go to QA27.3]

A27.2 Why don't you use computer programs already on the mobile to keep track of customers?

[Go to QA28.1]

A27.4 Compared to a year ago, would you say you are using computer programs already on the mobile more or less or about the same amount to keep track of customers? **[Use SHOW CARD 4]**

A27.5 Why are you using computer programs already on the mobile to keep track of customers?

A27.6 About how many days in the past week did you use computer programs already on the mobile to keep track of the customers? **[Use SHOW CARD 5]** _____

A28.1 How often do you use computer programs already on the mobile to keep track of money in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA28.2, else go to QA28.3]

A28.2 Why don't you use computer programs already on the mobile to keep track of money in this business?

[Go to QA29.1]

A28.3 Compared to a year ago, would you say you are using computer programs already on the mobile more or less or about the same amount to keep track of money in this business? **[Use SHOW CARD 4]** _____

A28.4 Why are you using computer programs already on the mobile to keep track of money in this business?

A28.5 About how many days in the past week did you use computer programs already on the mobile to keep track of money in this business? **[Use SHOW CARD 5]** _____

A29.1 How often do you use computer programs already on the mobile to record information about employees? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA29.2, else go to QA29.3]

A29.2 Why don't you use computer programs already on the mobile to record information about employees?

[Go to QA30.1]

A29.4 Compared to a year ago, would you say you are using computer programs already on the mobile more or less or about the same amount to record information about employees? **[Use SHOW CARD 4]** _____

A29.5 Why are you using computer programs already on the mobile to record information about employees?

A29.6 About how many days in the past week did you use computer programs already on the mobile to record information about employees? **[Use SHOW CARD 5]** _____

A30.1 How often do you use the mobile to send money to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA30.2, else go to QA30.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A30.2 Why don't you use the mobile to send money to your family and friends?

[Go to QA31.1]

A30.3 About how many days in the past week did you use the mobile to send money to your family and friends? **[Use SHOW CARD 5]**

A31.1 How often do you use the mobile to send money to pay bills from suppliers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QA31.2, else go to QA31.3]

A31.2 Why don't you use the mobile to send money to pay bills from suppliers?

[Go to QA32.1]

A31.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send money to pay bills from suppliers? **[Use SHOW CARD 4]**

A31.4 Why are you using the mobile to send money to pay bills from suppliers?

A31.5 About how many days in the past week did you use the mobile to send money to pay bills from suppliers? **[Use SHOW CARD 5]**

A32.1 How often do you use the mobile to send money to employees? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA32.2, else go to QA32.3]

A32.2 Why don't you use the mobile to send money to employees?

[Go to QA33.1]

A32.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send money to employees? **[Use SHOW CARD 4]** _____

A32.4 Why are you using the mobile to send money to employees?

A32.5 About how many days in the past week did you use the mobile to send money to employees? **[Use SHOW CARD 5]** _____

A33.1 How often do you use the mobile to send or receive money from customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA33.2, else go to QA33.3]

A33.2 Why don't you use the mobile to send or receive money from customers?

[Go to QA34.1]

A33.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send or receive money from customers? **[Use SHOW CARD 4]**

A33.4 Why are you using the mobile to send or receive money from customers?

A33.5 About how many days in the past week did you use the mobile to send or receive money from customers? **[Use SHOW CARD 5]**

A34.1 How often do you use the mobile to send or receive money from business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA34.2, else go to QA34.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A34.2 Why don't you use the mobile to send or receive money from business-people in other parts of Mumbai?

[Go to QA35.1]

A34.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send or receive money from business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____

A34.4 Why are you using the mobile to send or receive money from business-people in other parts of Mumbai?

A34.5 About how many days in the past week did you use the mobile to send or receive money from business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____

A35.1 How often do you use the mobile to send or receive money from business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA35.2, else go to QA35.3]

A35.2 Why don't you use the mobile to send or receive money from business-people in other parts of India?

[Go to QA36.1]

A35.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send or receive money from business-people in other parts of India? **[Use SHOW CARD 4]** _____

A35.4 Why are you using the mobile to send or receive money from business-people in other parts of India?

A35.5 About how many days in the past week did you use the mobile to send or receive money from business-people in other parts of India? **[Use SHOW CARD 5]** _____

A36.1 How often do you use the mobile to send or receive money from business-people outside India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA36.2, else go to QA36.3]

A36.2 Why don't you use the mobile to send or receive money from business-people outside India?

[Go to QA37.1]

A36.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to send or receive money from business-people outside India? **[Use SHOW CARD 4]**

A36.4 Why are you using the mobile to send or receive money from business-people outside India?

A36.5 About how many days in the past week did you use the mobile to send or receive money from business-people outside India? **[Use SHOW CARD 5]** _____

A37.1 How often do you use the mobile to deposit or withdraw money from this business into a banking account? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QA37.2, else go to QA37.3]

A37.2 Why don't you use the mobile to deposit or withdraw money from this business into a banking account?

[Go to SECTION B]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

A37.3 Compared to a year ago, would you say you are using the mobile more or less or about the same amount to deposit or withdraw money from this business into a banking account? **[Use SHOW CARD 4]** _____

A37.4 Why are you using the mobile to deposit or withdraw money from this business into a banking account?

A37.5 About how many days in the past week did you use the mobile to deposit or withdraw money from this business into a banking account? **[Use SHOW CARD 5]** _____

SECTION B

USE OF COMPUTERS AT WORK

B1.1 How often do you use the computer at work to keep track of supplies? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QB1.2, else go to QB1.3]

B1.2 Why don't you use the computer at work to keep track of supplies?

[Go to QB2.1]

B1.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to keep track of supplies? **[Use SHOW CARD 4]** _____

B1.4 Why are you using the computer at work to keep track of supplies?

B1.5 About how many days in the past week did you use the computer at work to keep track of supplies? **[Use SHOW CARD 5]**

B2.1 How often do you use the computer at work to keep track of inventory? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QB2.2, else go to QB2.3]

B2.2 Why don't you use the computer at work to keep track of inventory?

[Go to QB3.1]

B2.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to keep track of inventory? **[Use SHOW CARD 4]** _____

B2.4 Why are you using the computer at work to keep track of inventory?

B2.5 About how many days in the past week did you use the computer at work to keep track of inventory? **[Use SHOW CARD 5]**

B3.1 How often do you use the computer at work to keep track of money in this business? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QB3.2, else go to QB3.3]

B3.2 Why don't you use the computer at work to keep track of money in this business?

[Go to QB4.1]

B3.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to keep track of money in this business? **[Use SHOW CARD 4]**

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

B3.4 Why are you using the computer at work to keep track of money in this business?

B3.5 About how many days in the past week did you use the computer at work to keep track of money in this business? **[Use SHOW CARD 5]**

B4.1 How often do you use the computer at work to record information about employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QB4.2, else go to QB4.3]

B4.2 Why don't you use the computer at work to record information about employees?

[Go to QB5.1]

B4.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to record information about employees? **[Use SHOW CARD 4]**

B4.4 Why are you using the computer at work to record information about employees?

B4.5 About how many days in the past week did you use the computer at work to record information about employees? **[Use SHOW CARD 5]**

B5.1 How often do you use the computer at work to keep track of customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QB5.2, else go to QB5.3]

B5.2 Why don't you use the computer at work to keep track of customers?

[Go to SECTION C]

B5.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to keep track of customers? **[Use SHOW CARD 4]** _____

B5.4 Why are you using the computer at work to keep track of customers?

B5.5 About how many days in the past week did you use the computer at work to keep track of customers? **[Use SHOW CARD 5]**

SECTION C INTERNET USE AT WORK PLACE

C1.1 How often do you use the computer at work to send e-mail to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC1.2, else go to QC1.3]

C1.2 Why don't you use the computer at work to send e-mail to your family and friends?

[Go to QC2.1]

C1.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to your family and friends? **[Use SHOW CARD 4]**

C2.1 How often do you use the computer at work to send e-mail to customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC2.2, else go to QC2.3]

C2.2 Why don't you use the computer at work to send e-mail to customers?

[Go to QC3.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- C2.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to customers? **[Use SHOW CARD 4]** _____

- C2.4 Why are you using the computer at work to send e-mail to customers?

- C2.5 About how many days in the past week did you use the computer at work to send e-mail to customers? **[Use SHOW CARD 5]**

- C3.1 How often do you use the computer at work to send e-mail to employees? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QC3.2, else go to QC3.3]
- C3.2 Why don't you use the computer at work to send e-mail to employees?

[Go to QC4.1]
- C3.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to employees? **[Use SHOW CARD 4]** _____
- C3.4 Why are you using the computer at work to send e-mail to employees?

- C3.5 About how many days in the past week did you use the computer at work to send e-mail to employees? **[Use SHOW CARD 5]**

- C4.1 How often do you use the computer at work to send e-mail to suppliers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC4.2, else go to QC4.3]
- C4.2 Why don't you use the computer at work to send e-mail to suppliers?

[Go to QC5.1]
- C4.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to suppliers? **[Use SHOW CARD 4]** _____
- C4.4 Why are you using the computer at work to send e-mail to suppliers?

- C4.5 About how many days in the past week did you use the computer at work to send e-mail to suppliers? **[Use SHOW CARD 5]**

- C5.1 How often do you use the computer at work to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC5.2, else go to QC5.3]
- C5.2 Why don't you use the computer at work to send e-mail to business-people in other parts of Mumbai?

[Go to QC6.1]
- C5.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____
- C5.4 Why are you using the computer at work to send e-mail to business-people in other parts of Mumbai?

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- | | |
|--|--|
| <p>C5.5 About how many days in the past week did you use the computer at work to send e-mail to business-people in other parts of Mumbai? [Use SHOW CARD 5] _____</p> | <p>C7.4 Why are you using the computer at work to send e-mail to business-people outside India?
_____</p> |
| <p>C6.1 How often do you use the computer at work to send e-mail to business-people in other parts of India? [Use SHOW CARD 3] _____
[If the answer is NEVER ask QC6.2, else go to QC6.3]</p> | <p>C7.5 About how many days in the past week did you use the computer at work to send e-mail to business-people outside India? [Use SHOW CARD 5] _____</p> |
| <p>C6.2 Why don't you use the computer at work to send e-mail to business-people in other parts of India?

_____</p> <p>[Go to QC7.1]</p> | <p>C8.1 How often do you use the computer at work to browse the Internet for information about prices and other business news? [Use SHOW CARD 3]
_____</p> <p>[If the answer is NEVER ask QC8.2, else go to QC8.3]</p> |
| <p>C6.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people in other parts of India? [Use SHOW CARD 4] _____</p> | <p>C8.2 Why don't you use the computer at work to browse the Internet for information about prices and other business news?

_____</p> <p>[Go to QC9.1]</p> |
| <p>C6.4 Why are you using the computer at work to send e-mail to business-people in other parts of India?

_____</p> | <p>C8.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to browse the Internet for information about prices and other business news? [Use SHOW CARD 4] _____</p> |
| <p>C6.5 About how many days in the past week did you use the computer at work to send e-mail to business-people in other parts of India? [Use SHOW CARD 5] _____</p> | <p>C8.4 Why are you using the computer at work to browse the Internet for information about prices and other business news?

_____</p> |
| <p>C7.1 How often do you use the computer at work to send e-mail to business-people outside India? [Use SHOW CARD 3] _____
[If the answer is NEVER ask QC7.2, else go to QC7.3]</p> | <p>C8.5 About how many days in the past week did you use the computer at work to browse the Internet for information about prices and other business news? [Use SHOW CARD 5]
_____</p> |
| <p>C7.2 Why don't you use the computer at work to send e-mail to business-people outside India?

_____</p> <p>[Go to QC8.1]</p> | <p>C9.1 How often do you use the computer at work to search the Internet for information about ways to do things better in this business? [Use SHOW CARD 3] _____
[If the answer is NEVER ask QC9.2, else go to QC9.3]</p> |
| <p>C7.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people outside India? [Use SHOW CARD 4]
_____</p> | |

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

C9.2 Why don't you use the computer at work to search the Internet for information about ways to do things better in this business?

[Go to QC10.1]

C9.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 4]**

C9.4 Why are you using the computer at work to search the Internet for information about ways to do things better in this business?

C9.5 About how many days in the past week did you use the computer at work to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 5]**

C10.1 How often do you use the computer at work to download new computer programs to use in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC10.2, else go to QC10.3]

C10.2 Why don't you use the computer at work to download new computer programs to use in this business?

[Go to QC11.1]

C10.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to download new computer programs to use in this business? **[Use SHOW CARD 4]** _____

C10.4 Why are you using the computer at work to download new computer programs to use in this business?

C10.5 About how many days in the past week did you use the computer at work to download new computer programs to use in this business? **[Use SHOW CARD 5]** _____

C11.1 How often do you use the computer at work to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC11.2, else go to QC11.3]

C11.2 Why don't you use the computer at work to surf to online web sites for news, sports, or stories about famous people?

[Go to QC12.1]

C11.3 About how many days in the past week did you use the computer at work to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 5]**

C12.1 How often do you use the computer at work to chat online with your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC12.2, else go to QC12.3]

C12.2 Why don't you use the computer at work to chat online with your family and friends?

[Go to QC13.1]

C12.3 About how many days in the past week did you use the computer at work to chat online with your family and friends? **[Use SHOW CARD 5]**

C13.1 How often do you use the computer at work to chat online with suppliers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC13.2, else go to QC13.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

C13.2 Why don't you use the computer at work to chat online with suppliers?

[Go to QC14.1]

C13.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with suppliers? **[Use SHOW CARD 4]** _____

C13.4 Why are you using the computer at work to chat online with suppliers?

C13.5 About how many days in the past week did you use the computer at work to chat online with suppliers? **[Use SHOW CARD 5]**

C14.1 How often do you use the computer at work to chat online with customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC14.2, else go to QC14.3]

C14.2 Why don't you use the computer at work to chat online with customers?

[Go to QC15.1]

C14.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with customers? **[Use SHOW CARD 4]** _____

C14.4 Why are you using the computer at work to chat online with customers?

C14.5 About how many days in the past week did you use the computer at work to chat online with customers? **[Use SHOW CARD 5]**

C15.1 How often do you use the computer at work to chat online with employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC15.2, else go to QC15.3]

C15.2 Why don't you use the computer at work to chat online with employees?

[Go to QC16.1]

C15.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with employees? **[Use SHOW CARD 4]** _____

C15.4 Why are you using the computer at work to chat online with employees?

C15.5 About how many days in the past week did you use the computer at work to chat online with employees? **[Use SHOW CARD 5]**

C16.1 How often do you use the computer at work to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC16.2, else go to QC16.3]

C16.2 Why don't you use the computer at work to chat online with business-people in other parts of Mumbai?

[Go to QC17.1]

C16.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

C16.4 Why are you using the computer at work to chat online with business-people in other parts of Mumbai?

C16.5 About how many days in the past week did you use the computer at work to chat online with business-people in other parts of Mumbai? [Use SHOW CARD 5] _____

C17.1 How often do you use the computer at work to chat online with business-people in other parts of India? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QC17.2, else go to QC17.3]

C17.2 Why don't you use the computer at work to chat online with business-people in other parts of India?

[Go to QC18.1]

C17.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people in other parts of India? [Use SHOW CARD 4] _____

C17.4 Why are you using the computer at work to chat online with business-people in other parts of India?

C17.5 About how many days in the past week did you use the computer at work to chat online with business-people in other parts of India? [Use SHOW CARD 5] _____

C18.1 How often do you use the computer at work to chat online with business-people outside India? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QC18.2, else go to QC18.3]

C18.2 Why don't you use the computer at work to chat online with business-people outside India?

[Go to QC19.1]

C18.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people outside India? [Use SHOW CARD 4] _____

C18.4 Why are you using the computer at work to chat online with business-people outside India?

C18.5 About how many days in the past week did you use the computer at work to chat online with business-people outside India? [Use SHOW CARD 5] _____

C19.1 How often do you use the computer at work to buy something online for your personal use? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QC19.2, else go to QC19.3]

C19.2 Why don't you use the computer at work to buy something online for your personal use?

[Go to QC20.1]

C19.3 About how many days in the past week did you use the computer at work to buy something online for your personal use? [Use SHOW CARD 5] _____

C20.1 How often do you use the computer at work to buy something online for your family and friends? [Use SHOW CARD 3] _____

[If the answer is NEVER ask QC20.2, else go to QC20.3]

C20.2 Why don't you use the computer at work to buy something online for your family and friends?

[Go to QC21.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

C20.3 About how many days in the past week did you use the computer at work to buy something online for your family and friends? **[Use SHOW CARD 5]** _____

C21.1 How often do you use the computer at work to buy something online for this business? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QC21.2, else go to QC21.3]

C21.2 Why don't you use the computer at work to buy something online for this business?

[Go to QC22.1]

C21.3 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to buy something online for this business? **[Use SHOW CARD 4]**

C21.4 Why are you using the computer at work to buy something online for this business?

C21.5 About how many days in the past week did you use the computer at work to buy something online for business? **[Use SHOW CARD 5]**

C22.1 How often do you use the computer at work to download music? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC22.2, else go to QC22.3]

C22.2 Why don't you use the computer at work to download music?

[Go to QC23.1]

C22.3 About how many days in the past week did you use the computer at work to play download music? **[Use SHOW CARD 5]**

C23.1 How often do you use the computer at work to play video games? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QC23.2, else go to QC23.3]

C23.2 Why don't you use the computer at work to play video games?

[Go to SECTION D]

C23.3 About how many days in the past week did you use the computer at work to play video games? **[Use SHOW CARD 5]** _____

SECTION D USE OF HOME COMPUTER

D1.1 How often do you use your home computer to keep track of supplies? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QD1.2, else go to QD1.3]

D1.2 Why don't you use your home computer to keep track of supplies?

[Go to QD2.1]

D1.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to keep track of supplies? **[Use SHOW CARD 4]** _____

D1.4 Why are you using your home computer to keep track of supplies?

D1.5 About how many days in the past week did you use your home computer to keep track of supplies? **[Use SHOW CARD 5]**

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- D2.1 How often do you use your home computer to keep track of the inventory? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QD2.2, else go to QD2.3]
- D2.2 Why don't you use your home computer to keep track of inventory?

[Go to QD3.1]
- D2.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to keep track of inventory? **[Use SHOW CARD 4]** _____
- D2.4 Why are you using your home computer to keep track of inventory]?

- D2.5 About how many days in the past week did you use your home computer to keep track of inventory? **[Use SHOW CARD 5]**

- D3.1 How often do you use your home computer to keep track of money in this business? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QD3.2, else go to QD3.3]
- D3.2 Why don't you use your home computer to keep track of money in this business?

[Go to QD4.1]
- D3.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to keep track of money in this business? **[Use SHOW CARD 4]**

- D3.4 Why are you using your home computer to keep track of money in this business?

- D3.5 About how many days in the past week did you use your home computer to keep track of money in this business? **[Use SHOW CARD 5]**

- D4.1 How often do you use your home computer to record information about employees? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QD4.2, else go to QD4.3]
- D4.2 Why don't you use your home computer to record information about employees?

[Go to QD5.1]
- D4.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to record information about employees? **[Use SHOW CARD 4]**

- D4.4 Why are you using your home computer to record information about employees?

- D4.5 About how many days in the past week did you use your home computer to record information about employees? **[Use SHOW CARD 5]**

- D5.1 How often do you use your home computer to keep track of customers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QD5.2, else go to QD5.3]
- D5.2 Why don't you use your home computer to keep track of customers?

[Go to SECTION E]
- D5.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to keep track of customers? **[Use SHOW CARD 4]** _____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

D5.4 Why are you using your home computer to keep track of customers?

D5.5 About how many days in the past week did you use your home computer to keep track of customers? **[Use SHOW CARD 5]**

E2.4 Why are you using your home computer to send e-mail to customers?

E2.5 About how many days in the past week did you use your home computer to send e-mail to customers? **[Use SHOW CARD 5]**

E3.1 How often do you use your home computer to send e-mail to employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE3.2, else go to QE3.3]

E1.1 How often do you use your home computer to send e-mail to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE1.2, else go to QE1.3]

E1.2 Why don't you use your home computer to send e-mail to your family and friends?

[Go to QE2.1]

E1.3 About how many days in the past week did you use your home computer to send e-mail to your family and friends? **[Use SHOW CARD 5]**

E2.1 How often do you use your home computer to send e-mail to customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE2.2, else go to QE2.3]

E2.2 Why don't you use your home computer to send e-mail to _____ customers?

[Go to QE3.1]

E2.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to customers? **[Use SHOW CARD 4]** _____

E3.2 Why don't you use your home computer to send e-mail to employees?

[Go to QE4.1]

E3.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to employees? **[Use SHOW CARD 4]** _____

E3.4 Why are you using your home computer to send e-mail to employees?

E3.5 About how many days in the past week did you use your home computer to send e-mail to employees? **[Use SHOW CARD 5]**

E4.1 How often do you use your home computer to send e-mail to suppliers? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE4.2, else go to QE4.3]

E4.2 Why don't you use your home computer to send e-mail to suppliers?

[Go to QE5.1]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- E4.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to suppliers? **[Use SHOW CARD 4]** _____

- E4.4 Why are you using your home computer to send e-mail to suppliers?

- E4.5 About how many days in the past week did you use your home computer to send e-mail to suppliers? **[Use SHOW CARD 5]**

- E5.1 How often do you use your home computer to send an e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE5.2, else go to QE5.3]
- E5.2 Why don't you use your home computer to send an e-mail to business-people in other parts of Mumbai?

[Go to QE6.1]
- E5.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____
- E5.4 Why are you using your home computer to send e-mail to business-people in other parts of India?

- E5.5 About how many days in the past week did you use your home computer to send an e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____
- E6.1 How often do you use your home computer to send an e-mail to business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE6.2, else go to QE6.3]
- E6.2 Why don't you use your home computer to send an e-mail to business-people in other parts of India?

[Go to QE7.1]
- E6.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people in other parts of India? **[Use SHOW CARD 4]** _____
- E6.4 Why are you using your home computer to send e-mail to business-people in other parts of India?

- E6.5 About how many days in the past week did you use your home computer to send e-mail to business-people in other parts of India? **[Use SHOW CARD 5]** _____
- E7.1 How often do you use your home computer to send an e-mail to business-people outside India? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QE7.2, else go to QE7.3]
- E7.2 Why don't you use your home computer to send an e-mail to business-people outside India?

[Go to QE8.1]
- E7.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people outside India? **[Use SHOW CARD 4]**

- E7.4 Why are you using your home computer to send e-mail to business-people outside of India?

- E7.5 About how many days in the past week did you use your home computer to send an e-mail to business-people outside India? **[Use SHOW CARD 5]** _____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

E8.1 How often do you use your home computer to browse the Internet for information about prices and other business news? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE8.2, else go to QE8.3]

E8.2 Why don't you use your home computer to browse the Internet for information about prices and other business news?

[Go to QE9.1]

E8.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to browse the Internet for information about prices and other business news? **[Use SHOW CARD 4]** _____

E8.4 Why are you using your home computer to browse the Internet for information about prices and other business?

E8.5 About how many days in the past week did you use your home computer to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]** _____

E9.1 How often do you use your home computer to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE9.2, else go to QE9.3]

E9.2 Why don't you use your home computer to search the Internet for information about ways to do things better in this business?

[Go to QE10.1]

E9.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 4]**

E9.4 Why are you using your home computer to search the Internet for information about ways to do things better in this business?

E9.5 About how many days in the past week did you use your home computer to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 5]**

E10.1 How often do you use your home computer to download new computer programs to use in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE10.2, else go to QE10.3]

E10.2 Why don't you use your home computer to download new computer programs to use in this business?

[Go to QE11.1]

E10.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to download new computer programs to use in this business? **[Use SHOW CARD 4]** _____

E10.4 Why are you using your home computer to download new computer programs to use in this business?

E10.5 About how many days in the past week did you use your home computer to download new computer programs to use in this business? **[Use SHOW CARD 5]** _____

E11.1 How often do you use your home computer to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE11.2, else go to QE11.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

E11.2 Why don't you use your home computer to surf to online web sites for news, sports, or stories about famous people?

[Go to QE12.1]

E11.3 About how many days in the past week did you use your home computer to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 5]**

E12.1 How often do you use your home computer to chat online with your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE12.2, else go to QE12.3]

E12.2 Why don't you use your home computer to chat online with your family and friends?

[Go to QE13.1]

E12.3 About how many days in the past week did you use your home computer to chat online with your family and friends? **[Use SHOW CARD 5]**

E13.1 How often do you use your home computer to chat online with suppliers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE13.2, else go to QE13.3]

E13.2 Why don't you use your home computer to chat online with suppliers?

[Go to QE14.1]

E13.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with suppliers? **[Use SHOW CARD 4]** _____

E13.4 Why are you using your home computer to chat online with suppliers?

E13.5 About how many days in the past week did you use your home computer to chat online with suppliers? **[Use SHOW CARD 5]**

E14.1 How often do you use your home computer to chat online with customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE14.2, else go to QE14.3]

E14.2 Why don't you use your home computer to chat online with customers?

[Go to QE15.1]

E14.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with customers? **[Use SHOW CARD 4]** _____

E14.4 Why are you using your home computer to chat online with customers?

E14.5 About how many days in the past week did you use your home computer to chat online with customers? **[Use SHOW CARD 5]**

E15.1 How often do you use your home computer to chat online with employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE15.2, else go to QE15.3]

E15.2 Why don't you use your home computer to chat online with employees?

[Go to QE16.1]

E15.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with employees? **[Use SHOW CARD 4]** _____

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

E15.4 Why are you using your home computer to chat online with employees?

E15.5 About how many days in the past week did you use your home computer to chat online with employees? **[Use SHOW CARD 5]**

E16.1 How often do you use your home computer to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE16.2, else go to QE16.3]

E16.2 Why don't you use your home computer to chat online with business-people in other parts of Mumbai?

[Go to QE17.1]

E16.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____

E16.4 Why are you using your home computer to chat online with business-people in other parts of Mumbai?

E16.5 About how many days in the past week did you use your home computer to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____

E17.1 How often do you use your home computer to chat online with business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE17.2, else go to QE17.3]

E17.2 Why don't you use your home computer to chat online with business-people in other parts of India?

[Go to QE18.1]

E17.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people in other parts of India? **[Use SHOW CARD 4]** _____

E17.4 Why are you using your home computer to chat online with business-people in other parts of India?

E17.5 About how many days in the past week did you use your home computer to chat online with business-people in other parts of India? **[Use SHOW CARD 5]** _____

E18.1 How often do you use your home computer to chat online with business-people outside India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QE18.2, else go to QE18.3]

E18.2 Why don't you use your home computer to chat online with business-people outside India?

[Go to QE19.1]

E18.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people outside India? **[Use SHOW CARD 4]** _____

E18.4 Why are you using your home computer to chat online with business-people outside India?

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- E18.5 About how many days in the past week did you use your home computer to chat online with business-people outside India? **[Use SHOW CARD 5]** _____
- E19.1 How often do you use your home computer to buy something online for your personal use? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QE19.2, else go to QE19.3]
- E19.2 Why don't you use your home computer to buy something online for your personal use?

[Go to QE20.1]
- E19.3 About how many days in the past week did you use your home computer to buy something online for your personal use? **[Use SHOW CARD 5]** _____
- E20.1 How often do you use your home computer to buy something online for your family and friends? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QE20.2, else go to QE20.3]
- E20.2 Why don't you use your home computer to buy something online for your family and friends?

[Go to QE21.1]
- E20.3 About how many days in the past week did you use your home computer to buy something online for your family and friends? **[Use SHOW CARD 5]** _____
- E21.1 How often do you use your home computer to buy something online for this business? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QE21.2, else go to QE21.3]
- E21.2 Why don't you use your home computer to buy something online for this business?

[Go to QE22.1]
- E21.3 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to buy something online for this business? **[Use SHOW CARD 4]**

- E21.4 Why are you using your home computer to buy something online for this business?

- E21.5 About how many days in the past week did you use your home computer to buy something online for business? **[Use SHOW CARD 5]**

- E22.1 How often do you use your home computer to download music? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QE22.2, else go to QE22.3]
- E22.2 Why don't you use your home computer to download music?

[Go to QE23.1]
- E22.3 About how many days in the past week did you use your home computer to play download music? **[Use SHOW CARD 5]**

- E23.1 How often do you use your home computer to play video games? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QE23.2, else go to QE23.3]
- E23.2 Why don't you use your home computer to play video games?

[Go to SECTION F]
- E23.3 About how many days in the past week did you use your home computer to play video games? **[Use SHOW CARD 5]** _____

Continue on next page

SECTION F
INTERNET CAFÉS USE

F1.1 How often now do you go to an Internet café or cybercafé to use the computers there? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF1.2, else go to QF1.3]

F1.2 Why don't you go to an Internet café or cybercafé to use the computers there?

[Go to QF2.1]

F1.3 Compared to a year ago, would you say you go to Internet cafes to use the computers more or less or about the same amount? **[Use SHOW CARD 4]** _____

F1.4 Why do you go to Internet cafes to use the computers?

F1.5 About how many days in the past week did go to an Internet café to use the computers? **[Use SHOW CARD 5]** _____

F2.1 How often do you use an Internet café to surf to online web sites for news, sports, or stories about celebrities? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QF2.2, else go to QF2.3]

F2.2 Why don't you use a computer at an Internet café to surf to online web sites for news, sports, or stories about celebrities?

[Go to QF3.1]

F2.3 About how many days in the past week did you use a computer at an Internet café to surf to online web sites for news, sports, or stories about celebrities? **[Use SHOW CARD 5]**

F3.1 How often do you use a computer at an Internet café to chat with your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF3.2, else go to QF3.3]

F3.2 Why don't you use a computer at an Internet café to chat with your family and friends?

[Go to QF4.1]

F3.3 About how many days in the past week did you use a computer at an Internet café to chat with your family and friends? **[Use SHOW CARD 5]**

F4.1 How often do you use a computer at an Internet café to chat with customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF4.2, else go to QF4.3]

F4.2 Why don't you use a computer at an Internet café to chat with customers?

[Go to QF5.1]

F4.3 Compared to a year ago, would you say you are using a computer at an Internet café to chat with customers more, less, or about the same amount? **[Use SHOW CARD 4]** _____

F4.4 Why are you using a computer at an Internet café to chat with customers?

F4.5 About how many days in the past week did you use a computer at an Internet café to chat with customers? **[Use SHOW CARD 5]**

F5.1 How often do you use a computer at an Internet café to chat with business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QF5.2, else go to QF5.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- F5.2 Why don't you use a computer at an Internet café to chat with business-people in other parts of Mumbai?

[Go to QF6.1]
- F5.3 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people in other parts of Mumbai more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F5.4 Why are you using a computer at an Internet café to chat with business-people in other parts of Mumbai?

- F5.5 About how many days in the past week did you use a computer at an Internet café to chat with business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____
- F6.1 How often do you use a computer at an Internet café to chat with business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QF6.2, else go to QF6.3]
- F6.2 Why don't you use a computer at an Internet café to chat with business-people in other parts of India?

[Go to QF7.1]
- F6.3 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people in other parts of India more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F6.4 Why are you using a computer at an Internet café to chat with business-people in other parts of India?

- F6.5 About how many days in the past week did you use a computer at an Internet café to chat with business-people in other parts of India? **[Use SHOW CARD 5]** _____
- F7.1 How often do you use a computer at an Internet café to chat with business-people outside India? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF7.2, else go to QF7.3]
- F7.2 Why don't you use a computer at an Internet café to chat with business-people outside India?

[Go to QF8.1]
- F7.3 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people outside India more or less or about the same amount? **[Use SHOW CARD 4]**

- F7.4 Why are you using a computer at an Internet café to chat with business-people outside India?

- F7.5 About how many days in the past week did you use a computer at an Internet café to chat with business-people outside India? **[Use SHOW CARD 5]** _____
- F8.1 How often do you use a computer at an Internet café to send e-mail to your family or friends? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF8.2, else go to QF8.3]
- F8.2 Why don't you use a computer at an Internet café to send e-mail to your family or friends?

[Go to QF9.1]
- F8.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to your family and friends more or less or about the same amount? **[Use SHOW CARD 4]**

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

- F8.4 Why are you using a computer at an Internet café to send e-mail to your family and friends?

- F8.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to your family and friends? **[Use SHOW CARD 5]** _____
- F9.1 How often do you use a computer at an Internet café to send e-mail to customers? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF9.2, else go to QF9.3]
- F9.2 Why don't you use a computer at an Internet café to send e-mail to customers?

[Go to QF10.1]
- F9.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to customers more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F9.4 Why are you using a computer at an Internet café to send e-mail to customers?

- F9.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to customers? **[Use SHOW CARD 5]** _____
- F10.1 How often do you use a computer at an Internet café to send e-mail to suppliers? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF10.2, else go to QF10.3]
- F10.2 Why don't you use a computer at an Internet café to send e-mail to suppliers?

[Go to QF11.1]
- F10.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to suppliers more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F10.4 Why are you using a computer at an Internet café to send e-mail to suppliers?

- F10.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to suppliers? **[Use SHOW CARD 5]** _____
- F11.1 How often do you use a computer at an Internet café to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF11.2, else go to QF11.3]
- F11.2 Why don't you use a computer at an Internet café to send e-mail to business-people in other parts of Mumbai?

[Go to QF12.1]
- F11.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people in other parts of Mumbai more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F11.4 Why are you using a computer at an Internet café to send e-mail to business-people in other parts of Mumbai?

- F11.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____
- F12.1 How often do you use a computer at an Internet café to send e-mail to business-people in other parts of India? **[Use SHOW CARD 3]** _____
[If the answer is NEVER ask QF12.2, else go to QF12.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

F12.2 Why don't you use a computer at an Internet café to send e-mail to business-people in other parts of India?

[Go to QF13.1]

F12.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people in other parts of India more or less or about the same amount? **[Use SHOW CARD 4]** _____

F12.4 Why are you using a computer at an Internet café to send e-mail to business-people in other parts of India?

F12.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people in other parts of India? **[Use SHOW CARD 5]** _____

F13.1 How often do you use a computer at an Internet café to send e-mail to business-people outside India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF13.2, else go to QF13.3]

F13.2 Why don't you use a computer at an Internet café to send e-mail to business-people outside India?

[Go to QF14.1]

F13.3 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people outside India more or less or about the same amount? **[Use SHOW CARD 4]** _____

F13.4 Why are you using a computer at an Internet café to send e-mail to business-people outside India?

F13.5 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people outside India? **[Use SHOW CARD 5]** _____

F14.1 How often do you use a computer at an Internet café to buy something online for your personal use? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF14.2, else go to QF14.3]

F14.2 Why don't you use a computer at an Internet café to buy something online for your personal use?

[Go to QF15.1]

F14.3 About how many days in the past week did you use a computer at an Internet café to buy something online for your personal use? **[Use SHOW CARD 5]** _____

F15.1 How often do you use a computer at an Internet café to buy something online for your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF15.2, else go to QF15.3]

F15.2 Why don't you use a computer at an Internet café to buy something online for your family and friends?

[Go to QF16.1]

F15.3 About how many days in the past week did you use a computer at an Internet café to buy something online for your family and friends? **[Use SHOW CARD 5]** _____

F16.1 How often do you use a computer at an Internet café to browse the Internet for information about prices and other business news? **[Use SHOW CARD 3]** _____

[If the answer is NEVER ask QF16.2, else go to QF16.3]

Continue on next page

Appendix C.1: Phase I Fieldwork, Male Owners/Managers

F16.2 Why don't you use a computer at an Internet café to browse the Internet for information about prices and other business news?

[Go to QF17.1]

F16.3 Compared to a year ago, would you say you are using a computer at an Internet café to browse the Internet for information about prices and other business news more or less or about the same amount? **[Use SHOW CARD 4]**

F16.4 Why are you using a computer at an Internet café to browse the Internet for information about prices and other business news?

F16.5 About how many days in the past week did you use a computer at an Internet café to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]**

F17.1 How often do you use computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QF17.2, else go to QF17.3]

F17.2 Why don't you use computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that?

[Go to QF18.1]

F17.3 Compared to a year ago, would you say you are using computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that more or less or about the same amount? **[Use SHOW CARD 4]**

F17.4 Why are you using computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that?

F17.5 About how many days in the past week did you use a computer program already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that last week? **[Use SHOW CARD 5]**

F18.1 How often do you use a computer at an Internet café to play computer games? **[Use SHOW CARD 3]**

[If the answer is NEVER ask QF18.2, else go to QF18.3]

F18.2 Why don't you use a computer at an Internet café to play computer games?

F18.3 About how many days in the past week did you use a computer at an Internet café to play computer games? **[Use SHOW CARD 5]**

Please go to PART C

PART C (for All Respondents)

Now we have a few questions about you.

C1. How old are you? _____ Years

C2. [Do not ask] Gender:

a. Male	<input type="checkbox"/>
b. Female	<input type="checkbox"/>
c. Transsexual	<input type="checkbox"/>

C3. Please give information on your language abilities. Do you speak, read, or write... [Ask all]

Language	Speak	Read	Write
a. Hindi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Marathi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Other(s) (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C4. Please give information on your numerical abilities. [Tick only one]

a. I cannot recognize or write numbers.	<input type="checkbox"/>
b. I can recognize numbers but cannot read or write them.	<input type="checkbox"/>
c. I can read and write numbers but cannot do any calculations.	<input type="checkbox"/>
d. I can do simple addition, subtraction, and multiplication, etc.	<input type="checkbox"/>
e. I can calculate interest rates, tax calculations, etc.	<input type="checkbox"/>

C5. How much formal education have you had?

a. Primary school	<input type="checkbox"/>
b. High school/Std. 10	<input type="checkbox"/>
c. Higher secondary school/Std. 11	<input type="checkbox"/>
d. Bachelor degree/BA/BSc/BE/BTech/MBBS	<input type="checkbox"/>
e. Masters degree/MA/MSc/ME/MTech/MS	<input type="checkbox"/>
f. Diploma	<input type="checkbox"/>
g. Certificate holder	<input type="checkbox"/>
h. Never been to a school	<input type="checkbox"/>
i. Other: _____	<input type="checkbox"/>

C6. Have you undertaken any formal computer education training?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

C7. How many landline phones do you have?
_____ [Write '0' for none]

C8. How many mobiles phones do you have?
_____ [If no mobile phone, terminate the interview. If at least one, ask QC8A]

C8A. Do you use [any of] the mobile phones only for business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask QC8B, else go to QC9]

C8B. Why do you use certain mobile phones only for business?

C9. Please tell us about the two phones that you use most often for business.

	Mobile 1		Mobile 2	
a. What is the brand name?	_____	_____	_____	_____
b. How many years have you been using this phone?	_____	_____	_____	_____
c. Is it a prepaid connection?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Can it play MP3 songs or other audio?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Does it have a video recorder?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
f. Is it Internet enabled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
g. Does it have a dual SIM?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
h. Does it have a camera?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
i. Does it have picture messaging facility?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
j. Did you buy it "second-hand"?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

This is the end of the survey.
Thank you very much!

PART A (Women Entrepreneurs Only)

SECTION 1 OPINION ON BUSINESS

1. On a normal working/business day, how many hours do you spend for:

a. Business-related activities	_____ hours
b. Home-related activities	_____ hours

2. Would you say that most of your customers are women?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

3. Would you say that most of your suppliers are women?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

4. Would you say that most of your business friends are women?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

5. Here are some things that people who own businesses sometimes say. Please tell me how strongly you agree or disagree with each statement. **[Use SHOW CARD 1]**

a. Because of my business, I am feeling more confident.	_____
b. Because of my business, I have gained respect among my friends and in my neighborhood.	_____
c. Despite my business, my parents do not feel especially proud of me.	_____
d. Because of my business, my parents-in-law are proud of me.	_____
e. Despite my business, my husband does not show me any more respect.	_____
f. Despite my business, my opinions are not considered to be important in family decisions.	_____

SECTION 2 OPINION ON MOBILES

6. Do you have/own a mobile phone?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q7, else go to SECTION 3]

7. Please tell how well each of the following statements describes your experience with your mobile phone. **[Use SHOW CARD 1]**

a. My mobile hardly ever helps this business make more money.	_____
b. I get less work done because my mobile phone interferes.	_____
c. Using a mobile hardly ever helps this business save money.	_____
d. My mobile helps me keep informed about prices and other business news.	_____
e. Using my mobile to go online to the Internet does not make it any easier to do business.	_____
f. Having a mobile makes me more confident that this business will survive.	_____
g. My mobile helps me come and go without worrying about missing important business phone calls.	_____
h. Using my mobile makes it easier to stay in touch with my family and friends.	_____
i. Using my mobile does not help me stay in touch with suppliers for this business.	_____
j. Using my mobile helps me stay in touch with current customers.	_____
k. My mobile does not help me find new customers.	_____
l. My mobile helps me stay in touch with other business people who have similar interests and problems like mine.	_____
m. Using a mobile makes me feel more connected to businesses in other parts of Mumbai.	_____
n. Having a mobile does not make me feel especially important.	_____
o. Having a mobile makes me feel up-to-date.	_____
p. Having a mobile does not make me any more confident that this business will grow.	_____

Continue on next page

**SECTION 3
COMPUTERS AT HOME**

Now we would like to know about your computers at home.

8. Please tell me whether you have the following at home:

a. Personal computer [If YES ask Q9a]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Laptop [If YES ask Q9b]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Internet connection [If YES ask Q9c]	<input type="checkbox"/> Yes	<input type="checkbox"/> No

[If NO to ALL (a, b, and c), go to Section 4]

9. Please tell me how many years ago did you get first get a: [Ask only applicable questions]

a. Personal computer	_____
b. Laptop	_____
c. Internet connection	_____

10. [Ask only if YES to Q8a] Do you use your computer at home for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

11. [Ask only if YES to Q8b] Do you bring your home laptop to work to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

12. [Ask only if YES to Q8c] Do you connect to the Internet on your home computer to do business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

13. What specific things do you do with computers at home and Internet? [Probe: Anything else?]

**SECTION 4
ENTERPRISE/BUSINESS DETAILS**

14. How many years ago was this business started?
_____ years

15. How many hired workers does this business have?
_____ [Note: Hired workers are full-time employees who are working on a regular basis. Husband, wife, parents, own siblings, sons, and daughters should NOT be counted as hired workers. More distant relatives who work in the business and who are paid should be included in this count.]

16. Do you have any relatives working in this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q17, else go to Q18]

17. How many of the paid workers are your relatives?

18. Out of the total hired workers, how many are women? _____

19. Are there any women among:

a. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No

20. Which of the following categories best describes this business?

a. Manufacturing	<input type="checkbox"/>
b. Services	<input type="checkbox"/>
c. Trade	<input type="checkbox"/>
d. Other: _____	<input type="checkbox"/>

21. Please describe your product/services/trade:

22. How do you describe customers of this business? [Mark all that apply]

a. Customers are people who walk-in.	<input type="checkbox"/>
b. Customers are from other parts of Mumbai.	<input type="checkbox"/>
c. Customers are from outside Mumbai.	<input type="checkbox"/>
d. Customers are from outside India.	<input type="checkbox"/>
e. Customers come through my sales representatives.	<input type="checkbox"/>
f. Customers come through the mobile phone.	<input type="checkbox"/>
g. Customers come through e-mail.	<input type="checkbox"/>
h. Customers are through the retail vendors.	<input type="checkbox"/>
i. Other: _____	<input type="checkbox"/>

Continue on next page

Appendix C.2: Phase II Fieldwork, Female Owners

23. Is this the only business you own?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>
c. Refused	<input type="checkbox"/>

[If NO ask Q24 and Q25, else go to Q26]

24. What are your other businesses? **[Probe for type of business]**

25. To manage your other businesses, do you:

a. Make regular visits in person	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Use a mobile phone	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Use e-mail	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Use Internet online chatting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

26. Do you have landline phones at this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q27, else go to Q28]

27. How many landline phones do you have?

28. Do you ever use external PCOs/STD booths for this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q29, else go to Q30]

29. Why do you use PCOs/STD booths?

30. Do you ever use your friends'/others' **landline** phones to receive calls for this business?

a. Yes	<input type="checkbox"/>
a. No	<input type="checkbox"/>

[If YES ask Q31, else go to Q32]

31. Why do you use friends'/others' landlines to receive calls?

32. Do you ever use your friends'/others' **mobile** phones to receive calls for this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q33, else go to Q34]

33. Why do you use friends'/others' mobile phones to receive calls?

34. Have you ever given mobile phones to your employees to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

35. Please tell me the main reasons for not providing OR providing mobile phones to your employees.

36. Do your employees have personal mobile phones?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q37 and Q38, else go to SECTION 5]

37. Do they ever use their personal mobile phones for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

38. Do you pay the phone bills for your employees when they use their own mobiles for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

SECTION 5 COMPUTERS IN THE BUSINESS WORKPLACE

39. Does this business have computers in the workplace?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q40, else skip to SECTION 7]

Continue on next page

Appendix C.2: Phase II Fieldwork, Female Owners

40. Please tell me the details about your computers.
How many years ago was the first computer bought for this business? _____

41. Why was the first computer bought? [**Probe: Any other reasons?**]

42. Why do you use computers at work? [**Probe: Any other reason?**]

43. How many computers does this business have now? _____

44. Who uses the business computer(s)? [**Ask all**]

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

45. Please answer the following questions about your first two computers.

	Computer 1		Computer 2	
a. Is it branded?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Is this computer connected to the Internet?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Does it have CD/ DVD ROM facility?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Does it have USB port (to connect pen/ external drive) in the front?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Does it have the Microsoft office software (Word, Excel)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
f. Does it have other software like Tally, CAD, ERP, Inventory, Adobe Photoshop?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
g. Did you buy it "second-hand"?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

46. Have you provided computers for the employees to use at work?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q47, else go to Q48]

47. Please tell me the main reasons for providing computers for your employees.

48. [**Only ask if the business is an Internet café or desktop publishing**] If your computers are used by your customers, for what purpose(s) are they used?

a. _____

b. _____

49. Does this business have an e-mail address?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q50 and 51, else go to Q52]

50. For how many years has this business had an e-mail ID? _____ years

51. Why did you set up an e-mail address for this business?

52. Does this business have a permanent website online?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q53, else go to go to SECTION 6]

53. What is the address of your website?

54. For how many years have you had the website?
_____ years

55. Why was a website created for this business?

56. Do you update the website regularly?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

Continue on next page

SECTION 6
OPINION ON WORK COMPUTERS

57. I am going to read you some statements about work computers and I would like you to tell me how much you agree or disagree with each.
["Work computers" are both computers kept at business and computers at home but also used for business purposes.] [Use SHOW CARD 1]

a.	My work computer hardly ever helps this business make more money.	_____
b.	I get less work done because my work computer interferes.	_____
c.	Using a work computer hardly ever helps this business save money.	_____
d.	My work computer helps me keep informed about prices and other business news.	_____
e.	Using a work computer to go online to the Internet does not make it any easier to do business.	_____
f.	Having a work computer makes me more confident that this business will survive.	_____
g.	A work computer helps me come and go without worrying about missing important business phone calls.	_____
h.	Using my work computer makes it easier to stay in touch with my family and friends.	_____
i.	Using a work computer does not help me stay in touch with the suppliers of this business.	_____
j.	Using a work computer helps me stay in touch with the current customers.	_____
k.	A work computer does not help to find new customers.	_____
l.	A work computer helps me stay in touch with other business people who have similar interests and problems like mine	_____
m.	Using a work computer makes me feel more connected to businesses in other parts of Mumbai.	_____
n.	Having a work computer does not make me feel especially important.	_____
o.	Having a work computer makes me feel up-to-date.	_____
p.	Having a work computer does not make me any more confident that this business will grow.	_____

SECTION 7
INTERNET & INTERNET CAFE

58. Does the business have an Internet connection?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q59, else go to Q64]

59. How many years ago did this business first get an Internet connection? _____ years

60. Why did this business first get an Internet connection?

61. Does the business have wireless Internet facility?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

62. Who uses the Internet at work? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

63. What are the main reasons you use the Internet at work? **[Probe: Any other reasons?]**

64. Do you ever use computers at an Internet café for business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q65, else go to SECTION 10]

65. For how many years you have been using Internet cafés for business purposes? _____ years

66. Why did you first start going to Internet cafés for business purposes?

Continue on next page

Appendix C.2: Phase II Fieldwork, Female Owners

67. Approximately many kilometers away from this business is the Internet café you use?

_____ KM

68. Who uses an Internet café for this business? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Other workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

69. Do you ever feel uncomfortable going to the Internet café, because most of the customers are men?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

70. Why do you use the Internet café for business now? **[Probe: Any other reasons?]**

71. Please give information on the Internet cafés that you use:

a. The Internet café is a branch of Internet café chains. (Example: Sify, Webworld of Reliance)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. The Internet café is an independent private enterprise.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. The Internet café is run by the government.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. The Internet café is run by a non-governmental organization.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

SECTION 9 OPINION ON INTERNET CAFES

72. Please respond to the following statements about Internet cafes by telling me how much you agree or disagree with each. **[Use SHOW CARD 1]**

a. The computers at the Internet café hardly ever help this business make more money.	_____
b. I get less done at work because I use a computer at the Internet café.	_____
c. Using a computer at the Internet café hardly ever helps this business to save money.	_____
d. The computers at the Internet café help me keep informed about prices and other business news.	_____

e. Using a computer at the Internet café to go online to the Internet makes it easier to do business.	_____
f. Using a computer at the Internet café makes me more confident that this business will survive.	_____
g. The computers at the Internet café help me come and go without worrying about missing important business calls.	_____
h. Using at computer at the Internet café makes it easier to stay in touch with my family and friends.	_____
i. Using a computer at the Internet café does not help me stay in touch with the suppliers of this business.	_____
j. Using a computer at the Internet café helps me stay in touch with current customers.	_____
k. The computers at the Internet café do not help me find new customers.	_____
l. The computers at the Internet café help me stay in touch with other business people who have similar interests and problems like mine.	_____
m. Using a computer at the Internet café makes me feel more connected to businesses in other parts of Mumbai.	_____
n. Using a computer at the Internet café does not make me feel especially important.	_____
o. Using a computer at the Internet café makes me feel up-to-date.	_____
p. Using a computer at the Internet café does not make me any more confident that this business will grow.	_____

SECTION 10 BUSINESS GROWTH

73. Compared to a year ago, has the annual income of this business:

a. Increased [By what percentage?]	<input type="checkbox"/> Yes, by _____%
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [By what percentage?]	<input type="checkbox"/> Yes, by _____%

74. Why do you think the annual income of the business has increased/decreased/remained the same?

Continue on next page

Appendix C.2: Phase II Fieldwork, Female Owners

75. Compared to a year ago, has the number of hired workers:

a. Increased [How many?]	<input type="checkbox"/> Yes, by _____
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [How many?]	<input type="checkbox"/> Yes, by _____

76. Why has the number of hired workers increased/decreased/stayed the same?

[If the business has increased ask Q77, else go to Q78]

77. Please tell whether you agree or disagree with the statements below.

a. Having a mobile phone has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Having a work computer has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Going to the Internet cafes has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

78. Is this business registered with the government?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q79 and Q80, else go to Q81]

79. What kind of registration do you have?

80. How many years ago did you register?
_____ years

81. Does this business have a PAN number?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

82. Does this business have a bank account?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q83, else go to Q84.]

83. How many years ago did you get that bank account? _____ years

84. For maintaining the financial and business records of this business, which of the following statements is **most** applicable? **[Select only one]**

a. Financial accounts and business records are not kept for this business.	<input type="checkbox"/>
b. Accounts are written by hand but not given to an accountant.	<input type="checkbox"/>
c. Accounts and business records are written by hand and then given to an accountant.	<input type="checkbox"/>
d. Accounts and business records are kept in a computer located at home.	<input type="checkbox"/>
e. Accounts and business records are kept in a computer at this business.	<input type="checkbox"/>

85. How, if at all, have the recent Mumbai terrorist attacks affected this business? Compared to before the terrorist attacks:

a. We are doing less business.	<input type="checkbox"/>
b. We are doing more business.	<input type="checkbox"/>
c. We are doing just about the same amount of business.	<input type="checkbox"/>

[Use SHOW CARD 2 for Q86–88]

86. Compared to before the terrorist attacks in Mumbai, are you using your mobile phone for business more, less, or about the same amount?

87. Compared to before the terrorist attacks, are you using a work computer for business more, less, or about the same amount? _____

88. Compared to before the attacks, are you going to an Internet café for business more, less, or about the same amount? _____

89. Compared to before the terrorist attacks, are you using your mobile phone to talk with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

90. Compared to before the terrorist attacks, are you using work computer to communicate with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

91. Compared to before the terrorist attacks, are you using Internet café to talk with family and friends more, less, or about the same amount?

a. More	<input type="checkbox"/>
b. Less	<input type="checkbox"/>
c. About the same amount	<input type="checkbox"/>

Please go to PART B

PART C (for Women Respondents)

Now we have a few questions about you.

CW1. How old are you: _____ years

CW2. Please give information on your language abilities. Do you speak, read, or write... **[Ask all]**

Language	Speak	Read	Write
a. Hindi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Marathi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Other(s) (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CW3. Please give information on your numerical abilities. **[Tick only one]**

a. I cannot recognize or write numbers.	<input type="checkbox"/>
b. I can recognize numbers but cannot read or write them.	<input type="checkbox"/>
c. I can read and write numbers but cannot do any calculations.	<input type="checkbox"/>
d. I can do simple addition, subtraction & multiplication, etc.	<input type="checkbox"/>
e. I can calculate interest rates, tax calculations etc.	<input type="checkbox"/>

CW4. Do you have a separate personal bank account?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask QCW4A–C, else go to QCW5]

CW4A. Do you make withdrawals or payments on your own?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

CW4B. Is it a joint account?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask QCW4C, else go to QCW5]

CW4C. With whom? _____

CW5. How much formal education have you had? **[Tick all that apply]**

a. Primary school	<input type="checkbox"/>
b. High school/Std. 10	<input type="checkbox"/>
c. Higher secondary school/Std. 11	<input type="checkbox"/>
d. Bachelor degree/BA/BSc/BE/BTech/MBBS	<input type="checkbox"/>
e. Masters degree/MA/MSc/ME/MTech/MS	<input type="checkbox"/>
f. Diploma	<input type="checkbox"/>
g. Certificate holder	<input type="checkbox"/>
h. Never been to a school	<input type="checkbox"/>
i. Other: _____	<input type="checkbox"/>

CW6. Have you undertaken any formal computer education training?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

CW7. How many landline phones do you have?
_____ **[Write '0' for none]**

CW8. How many mobiles phones do you have?
_____ **[Write '0' for none. If none, go to QCW10. If at least one, ask QCW8A]**

CW8A. Do you use [any of] the mobile phones only for business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If yes, ask QCW8B, else go to QCW9.]

GW8B. Why do you use certain mobile phones only for business?

Continue on next page

Appendix C.2: Phase II Fieldwork, Female Owners

CW9. Please tell us about the mobile phone(s) that you use most often for business.

	Mobile 1		Mobile 2	
a. What is the brand name?	_____		_____	
b. How many years have you been using this phone?	_____		_____	
c. Is it a prepaid connection?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Can it play MP3 songs or other audio?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Does it have a video recorder?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
f. Is it Internet enabled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
g. Does it have a dual SIM?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
h. Does it have a camera?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
i. Does it have picture messaging facility?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
j. Did you buy it "second-hand"?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

CW10. Please tell us about your marital status. Are you:

a. Married	<input type="checkbox"/>
b. Unmarried	<input type="checkbox"/>
c. Divorced	<input type="checkbox"/>
d. Widow	<input type="checkbox"/>
e. Other: _____	<input type="checkbox"/>

[If (a), (c), or (d) ask QCW11 and QCW12, else go to QCW14]

CW11. How many children do you have?

<input type="checkbox"/> None [If None, go to GWQ14]						
Girls	Number	Age in years	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
Boys	Number	Age in years	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

CW12. Do you *usually* bring any of your children to this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask QCW12A, else go to QCW13]

CW12A. What is the age of child/children who is/are usually brought to work? _____

CW13. How do you manage things at home (cooking, caring for guests, children, elders etc)? **[Tick all that apply.]**

a. I have part-time domestic help.	<input type="checkbox"/>
b. I have full-time domestic help.	<input type="checkbox"/>
c. My mother/in-laws share the work at home.	<input type="checkbox"/>
d. My husband shares the work at home.	<input type="checkbox"/>
e. I manage things at home some other way. (Please specify)	<input type="checkbox"/>

CW14. How many kilometers from this business do you live? _____ kilometers

[If business is part of respondent's house, record as "0" kilometers]

CW15. Among below, who lives with you? **[Tick all that apply]**

a. Parents	<input type="checkbox"/>
b. Parents-in-law	<input type="checkbox"/>
c. Brothers/sisters	<input type="checkbox"/>
d. Brothers/sisters-in-laws	<input type="checkbox"/>
e. Grandparents	<input type="checkbox"/>
f. Others: _____	<input type="checkbox"/>

CW16. Are you the only member of your immediate family who earns money?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If NO, ask CW17 and CW18. If YES, end of survey]

CW17. Who else earns money? _____

CW18. Compared to other earning members, how much do you earn?

a. I earn more than others do.	<input type="checkbox"/>
b. I earn less than others do.	<input type="checkbox"/>
c. I earn just about the same amount others do.	<input type="checkbox"/>

**This is the end of the survey.
Thank you very much!**



Indian Institute of Technology Delhi

NO:

Greetings!

We are researching how small businesses in Mumbai use Internet cafes. You have been scientifically chosen to participate. We would very much like to hear about your experiences. This research is supported by IIT-Delhi. We promise not to identify you in any way in our final report. What we find out will help small businesses like yours.

Your identity will remain confidential. Therefore, we encourage you to respond freely and honestly to the questions that will follow. We would be happy to provide further details about this research, if you have any questions.

Thank you,

Yours truly,
Dr. P. Vigneswara Ilavarasan

I, _____ of _____ (Enterprise name, if any) hereby agree to participate in this survey and to provide the information on a voluntary basis.

Signature with date

Name & mobile number, if any

Please attach proof of interview (Letterhead / Visiting Card / Rubber Stamp), signed.

For further details:

Dr. P. Vigneswara Ilavarasan, Assistant Professor
Department of Humanities & Social Sciences, IIT Delhi
Hauz Khas, New Delhi. 110 016
Ph: 011-26591374, Fax: 011-26596509 , E-mail: vignesh@hss.iitd.ac.in

Date of Interview ___/___/2009 Time of Interview : Start : _____ End : _____

Interviewer's sign & date : _____ Reviewer's sign & date : _____

PART A

SECTION 1 ONLY FOR MANAGERS

[For managers only. Owners should begin at SECTION 2]

1. Please tell me about your responsibilities in this business:

a. Are you responsible for hiring and managing the workers?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Do you handle cash transactions on your owner's behalf?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Do you interact with customers more than the owner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Do you interact with the suppliers more than the owner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

2. Owner is: [Tick one, do not ask]

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>
Transsexual	<input type="checkbox"/>

3. How frequently does the owner visit this workplace?

a. Nearly every day	<input type="checkbox"/>
b. A few days every week	<input type="checkbox"/>
c. Once a week	<input type="checkbox"/>
d. Once a month	<input type="checkbox"/>
e. Less often than once a month	<input type="checkbox"/>
f. Never	<input type="checkbox"/>

4. In the owner's absence, how frequently are you in contact him or her?

a. Several times a day	<input type="checkbox"/>
b. Once a day	<input type="checkbox"/>
c. Once every three to five days	<input type="checkbox"/>
d. Once a week	<input type="checkbox"/>
e. Once a month	<input type="checkbox"/>
f. Less often than once a month	<input type="checkbox"/>

5. In the owner's absence, what are the one or two ways you most often contact the owner? Do you: [Tick up to two responses]

a. Call the owner's landline phone	<input type="checkbox"/>
b. Call the owner's mobile phone	<input type="checkbox"/>
c. Give the owner a "missed call" ¹	<input type="checkbox"/>
d. Send the owner SMS ² or text messages	<input type="checkbox"/>
e. Send the owner e-mails	<input type="checkbox"/>
f. Chat with the owner in the Internet	<input type="checkbox"/>
g. Other: _____	<input type="checkbox"/>

¹ A missed call is a way someone signals you by calling your phone, letting it ring for a moment or two, and then hanging up.

² SMS or text message is a short written message sent between mobile phones.

SECTION 2 ONLY FOR OWNERS

6. Is this the only business you own?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>
c. Refused	<input type="checkbox"/>

[If NO ask Q6A and Q6B, else go to SECTION 3]

6A. What are your other businesses? [Probe for type of business]

6B. To manage your other businesses, do you:

a. Make regular visits in person	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Use a mobile phone	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Use e-mail	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Use Internet online chatting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

From this section, questions are for both managers & owners.

**SECTION 3
USE OF INTERNET CAFE
For Managers and Owners**

7. For how many years you have been using Internet cafés for business purposes?
_____ years
8. Why did you first start going to Internet cafés for business purposes?

9. Approximately how many kilometers away from this business is the Internet café you use?
_____ KM

10. Who uses Internet café for this business? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Other workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

11. Why do you use the Internet café for business now? **[Probe: Any other reasons?]**

12. Please give information on the Internet cafés that you use:

a. The Internet café is a branch of Internet café chains. (Example: Sify, Webworld of Reliance)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. The Internet café is an independent private enterprise.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. The Internet café is run by the government.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. The Internet café is run by a non-governmental organization.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e. Other: _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No

**SECTION 4
OPINION ON INTERNET CAFES**

13. Please respond to the following statements about Internet cafés by telling me how much you agree or disagree with each. **[Use SHOW CARD 1]**

a. The computers at the Internet café hardly ever help this business make more money.	_____
b. I get less done at work because I use a computer at the Internet café.	_____
c. Using a computer at the Internet café hardly ever helps this business to save money.	_____
d. The computers at the Internet café help me keep informed about prices and other business news.	_____
e. Using a computer at the Internet café to go online to the Internet makes it easier to do business.	_____
f. Using a computer at the Internet café makes me more confident that this business will survive.	_____
g. The computers at the Internet café help me come and go without worrying about missing important business calls.	_____
h. Using a computer at the Internet café makes it easier to stay in touch with my family and friends.	_____
i. Using a computer at the Internet café does not help me stay in touch with the suppliers of this business.	_____
j. Using a computer at the Internet café helps me stay in touch with current customers.	_____
k. The computers at the Internet café do not help me find new customers.	_____
l. The computers at the Internet café help me stay in touch with other business people who have similar interests and problems like mine.	_____
m. Using a computer at the Internet café makes me feel more connected to businesses in other parts of Mumbai.	_____
n. Using a computer at the Internet café does not make me feel especially important.	_____
o. Using a computer at the Internet café makes me feel up-to-date.	_____
p. Using a computer at the Internet café does not make me any more confident that this business will grow.	_____

SECTION 5
MOBILE & COMPUTERS AT HOME

Now we would like to know about your mobiles & computers at home.

14. Do you have/own a mobile phone?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

15. Please tell me whether you have the following at home:

a. Personal computer [If YES ask Q16a]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Laptop [If YES ask Q16b]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Internet connection [If YES ask Q16c]	<input type="checkbox"/> Yes	<input type="checkbox"/> No

[If NO to ALL (a, b, and c), go to Section 6]

16. Please tell me how many years ago did you get first get a: [Ask only applicable questions]

a. Personal computer	_____
b. Laptop	_____
c. Internet connection	_____

17. [Ask only if YES to Q15a] Do you use your computer at home for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

18. [Ask only if YES to Q15b] Do you bring your home laptop to work to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

19. [Ask only if YES to Q15c] Do you connect to the Internet on your home computer to do business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

20. [Ask only if applicable] What specific things do you do with computers at home and Internet? [Probe: Anything else?]

SECTION 6
ENTERPRISE/BUSINESS DETAILS

21. How many years ago was this business started?
_____ years

22. How many hired workers does this business have? _____ [Note: Hired workers are full-time employees who are working on regular basis. Husband, wife, parents, own siblings, sons, and daughters should NOT be counted as hired workers. More distant relatives who work in the business and who are paid should be included in this count.]

23. Out of the total hired workers, how many are women? _____

24. Are there any women among:

a. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No

25. Which of the following categories best describes this business?

a. Manufacturing	<input type="checkbox"/>
b. Services	<input type="checkbox"/>
c. Trade	<input type="checkbox"/>
d. Other: _____	<input type="checkbox"/>

26. Please describe your product/services/trade:

27. How do you describe customers of this business? [Mark all that apply]

a. Customers are people who walk-in	<input type="checkbox"/>
b. Customers are from other parts of Mumbai	<input type="checkbox"/>
c. Customers are from outside Mumbai.	<input type="checkbox"/>
d. Customers are from outside India	<input type="checkbox"/>
e. Customers come through my sales representatives	<input type="checkbox"/>
f. Customers come through the mobile phone	<input type="checkbox"/>
g. Customers come through e-mail	<input type="checkbox"/>
h. Customers are through the retail vendors	<input type="checkbox"/>
i. Other: _____	<input type="checkbox"/>

28. Do you have landline phones at this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q28A, else go to Q29]

Appendix C.3: Phase III Fieldwork, Exploratory Sample

28A. How many landline phones do you have?

29. Do you ever use external PCOs/STD booths for this business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q29A, else go to Q30]

29A. Why do you use PCOs/STD booths?

30. Do you ever use your friends'/others' **landline** phones to receive calls for this business?

a. Yes	<input type="checkbox"/>
a. No	<input type="checkbox"/>

[If YES ask Q30A, else go to Q31]

30A. Why do you use friends'/others' landlines to receive calls?

31. Have you ever given mobile phones to your employees to use for business purposes?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

32. Please tell me the main reasons for not providing OR providing mobile phones to your employees.

SECTION 7

COMPUTERS AND INTERNET IN THE BUSINESS WORKPLACE.

33. Does this business have computers in the workplace?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q34, else skip to SECTION 8]

34. How many computers does this business have now? _____

35. Please tell me the details about your computers. How many years ago was the first computer bought for this business? _____ years

36. Why was the first computer bought? **[Probe: Any other reasons?]**

37. Why do you use computers at work? **[Probe: Any other reason?]**

38. Have you provided computers for the employees to use at work?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

39. Does this business have an e-mail address?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q39A and 39B, else go to Q40]

39A. For how many years has this business had an e-mail ID: _____ years

39B. Why did you set up an e-mail address for this business?

40. Does this business have a permanent website online?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q40A, B, C, and D, else go to SECTION 8]

40A. What is the address of your website?

40B. For how many years have you had the website? _____ years

40C. Why was a website created for this business?

Appendix C.3: Phase III Fieldwork, Exploratory Sample

40D. Do you update the website regularly?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

41. Does the business have an Internet connection?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q42, else go to Q46]

42. How many years ago did this business first get an Internet connection? _____ years

43. Why did this business first get an Internet connection?

44. Who uses the Internet at work? **[Ask all]**

a. Owners	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Managers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Supervisors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. Workers	<input type="checkbox"/> Yes	<input type="checkbox"/> No

45. What are the main reasons you use the Internet at work? **[Probe: Any other reasons?]**

SECTION 8 BUSINESS GROWTH

46. Compared to a year ago, has the annual income of this business:

a. Increased [By what percentage?]	<input type="checkbox"/> Yes, by _____%
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [By what percentage?]	<input type="checkbox"/> Yes, by _____%

47. Why do you think the annual income of the business has increased/decreased/remained the same?

48. Compared to a year ago, has the number of hired workers:

a. Increased [How many?]	<input type="checkbox"/> Yes, by _____
b. Remained the same	<input type="checkbox"/> Yes
c. Decreased [How many?]	<input type="checkbox"/> Yes, by _____

49. Why has the number of hired workers increased/decreased/stayed the same?

[If the business has increased ask Q50, else go to Q51]

50. Please say whether you agree or disagree with the statements below.

a. Having a mobile phone has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Having a work computer has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c. Going to the Internet cafes has helped this business grow.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

51. Is this business registered with the government?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q 51A and Q51B, else go to Q52]

51A. What kind of registration do you have?

51B. How many years ago did you register? _____ years

52. Does this business have a PAN number?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

53. Does this business have a bank account?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q53A, else go to Q54.]

53A. How many years ago did you get that bank account? _____ years

Appendix C.3: Phase III Fieldwork, Exploratory Sample

54. For maintaining the financial and business records of this business, which of the following statements is **most** applicable? **[Select only one]**

a. Financial accounts and business records are not kept for this business.	<input type="checkbox"/>
b. Accounts are written by hand but not given to an accountant.	<input type="checkbox"/>
c. Accounts and business records are written by hand and then given to an accountant.	<input type="checkbox"/>
d. Accounts and business records are kept in a computer located at home.	<input type="checkbox"/>
e. Accounts and business records are kept in a computer at this business.	<input type="checkbox"/>

PART B

SECTION A INTERNET USE AT HOME

A1. Do you use internet at home?

Yes	
No	

[If the answer is No then go to Section B]

A1.1 How often do you use your home computer to send e-mail to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA2.1]

A1.2 About how many days in the past week did you use your home computer to send e-mail to your family and friends? **[Use SHOW CARD 5]** _____

A2.1 How often do you use your home computer to send e-mail to customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA3.1]

A2.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to customers? **[Use SHOW CARD 4]** _____

A2.3 About how many days in the past week did you use your home computer to send e-mail to customers? **[Use SHOW CARD 5]** _____

A3.1 How often do you use your home computer to send e-mail to employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA4.1]

A3.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to employees? **[Use SHOW CARD 4]** _____

A3.3 About how many days in the past week did you use your home computer to send e-mail to employees? **[Use SHOW CARD 5]** _____

A4.1 How often do you use your home computer to send e-mail to suppliers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA5.1]

A4.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to suppliers? **[Use SHOW CARD 4]** _____

A4.3 About how many days in the past week did you use your home computer to send e-mail to suppliers? **[Use SHOW CARD 5]** _____

A5.1 How often do you use your home computer to send an e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA6.1]

A5.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 4]** _____

A5.3 About how many days in the past week did you use your home computer to send an e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____

Appendix C.3: Phase III Fieldwork, Exploratory Sample

A6.1 How often do you use your home computer to send an e-mail to business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA7.1]

A6.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people in other parts of India? **[Use SHOW CARD 4]**

A6.3 About how many days in the past week did you use your home computer to send e-mail to business-people in other parts of India? **[Use SHOW CARD 5]**

A7.1 How often do you use your home computer to send an e-mail to business-people outside India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QC8.1]

A7.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to send e-mail to business-people outside India? **[Use SHOW CARD 4]**

A7.3 About how many days in the past week did you use your home computer to send an e-mail to business-people outside India? **[Use SHOW CARD 5]**

A8.1 How often do you use your home computer to browse the Internet for information about prices and other business news? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QC9.1]

A8.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to browse the Internet for information about prices and other business news? **[Use SHOW CARD 4]**

A8.3 About how many days in the past week did you use your home computer to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]**

A9.1 How often do you use your home computer to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA10.1]

A9.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 4]**

A9.3 About how many days in the past week did you use your home computer to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 5]**

A10.1 How often do you use your home computer to download new computer programs to use in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA11.1]

A10.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to download new computer programs to use in this business? **[Use SHOW CARD 4]**

A10.3 About how many days in the past week did you use your home computer to download new computer programs to use in this business? **[Use SHOW CARD 5]**

A11.1 How often do you use your home computer to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA12.1]

A11.2 About how many days in the past week did you use your home computer to surf to online web sites for news, sports, or stories about famous people? **[Use SHOW CARD 5]**

A12.1 How often do you use your home computer to chat online with your family and friends? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA13.1]

Appendix C.3: Phase III Fieldwork, Exploratory Sample

A12.2 About how many days in the past week did you use your home computer to chat online with your family and friends? [Use SHOW CARD 5] _____

A13.1 How often do you use your home computer to chat online with suppliers? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA14.1]

A13.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with suppliers? [Use SHOW CARD 4] _____

A13.3 About how many days in the past week did you use your home computer to chat online with suppliers? [Use SHOW CARD 5] _____

A14.1 How often do you use your home computer to chat online with customers? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA15.1]

A14.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with customers? [Use SHOW CARD 4] _____

A14.3 About how many days in the past week did you use your home computer to chat online with customers? [Use SHOW CARD 5] _____

A15.1 How often do you use your home computer to chat online with employees? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA15.1]

A15.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with employees? [Use SHOW CARD 4] _____

A15.3 About how many days in the past week did you use your home computer to chat online with employees? [Use SHOW CARD 5] _____

A16.1 How often do you use your home computer to chat online with business-people in other parts of Mumbai? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA17.1]

A16.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people in other parts of Mumbai? [Use SHOW CARD 4] _____

A16.3 About how many days in the past week did you use your home computer to chat online with business-people in other parts of Mumbai? [Use SHOW CARD 5] _____

A17.1 How often do you use your home computer to chat online with business-people in other parts of India? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA18.1]

A17.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people in other parts of India? [Use SHOW CARD 4] _____

A17.3 About how many days in the past week did you use your home computer to chat online with business-people in other parts of India? [Use SHOW CARD 5] _____

A18.1 How often do you use your home computer to chat online with business-people outside India? [Use SHOW CARD 3] _____

[If the answer is NEVER then go to QA19.1]

A18.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to chat online with business-people outside India? [Use SHOW CARD 4] _____

A18.3 About how many days in the past week did you use your home computer to chat online with business-people outside India? [Use SHOW CARD 5] _____

Appendix C.3: Phase III Fieldwork, Exploratory Sample

A19.1 How often do you use your home computer to buy something online for your personal use? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA20.1]

A19.2 About how many days in the past week did you use your home computer to buy something online for your personal use? **[Use SHOW CARD 5]** _____

A20.1 How often do you use your home computer to buy something online for your family and friends? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA21.1]

A20.2 About how many days in the past week did you use your home computer to buy something online for your family and friends? **[Use SHOW CARD 5]** _____

A21.1 How often do you use your home computer to buy something online for this business? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QA22.1]

A21.2 Compared to a year ago, would you say you are using your home computer more or less or about the same amount to buy something online for this business? **[Use SHOW CARD 4]**

A21.3 About how many days in the past week did you use your home computer to buy something online for business? **[Use SHOW CARD 5]**

A22.1 How often do you use your home computer to download music? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QA23.1]

A22.2 About how many days in the past week did you use your home computer to play download music? **[Use SHOW CARD 5]**

A23.1 How often do you use your home computer to play video games? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to Section B]

A23.2 About how many days in the past week did you use your home computer to play video games? **[Use SHOW CARD 5]**

SECTION B INTERNET USE AT WORK PLACE

B1. Do you use internet at work place?

Yes	
No	

[If the answer is No then go to Section C]

B1.1 How often do you use the computer at work to send e-mail to your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QB2.1]

B1.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to your family and friends? **[Use SHOW CARD 4]**

B2.1 How often do you use the computer at work to send e-mail to customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QB3.1]

B2.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to customers? **[Use SHOW CARD 4]**

B2.3 About how many days in the past week did you use the computer at work to send e-mail to customers? **[Use SHOW CARD 5]**

B3.1 How often do you use the computer at work to send e-mail to employees? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QB4.1]

B3.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to employees? **[Use SHOW CARD 4]**

Appendix C.3: Phase III Fieldwork, Exploratory Sample

B3.3 About how many days in the past week did you use the computer at work to send e-mail to employees? **[Use SHOW CARD 5]**

B4.1 How often do you use the computer at work to send e-mail to suppliers? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB5.1]

B4.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to suppliers? **[Use SHOW CARD 4]**

B4.3 About how many days in the past week did you use the computer at work to send e-mail to suppliers? **[Use SHOW CARD 5]**

B5.1 How often do you use the computer at work to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB6.1]

B5.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 4]**

B5.3 About how many days in the past week did you use the computer at work to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 5]**

B6.1 How often do you use the computer at work to send e-mail to business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB7.1]

B6.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people in other parts of India? **[Use SHOW CARD 4]**

B6.3 About how many days in the past week did you use the computer at work to send e-mail to business-people in other parts of India? **[Use SHOW CARD 5]**

B7.1 How often do you use the computer at work to send e-mail to business-people outside India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB8.1]

B7.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to send e-mail to business-people outside India? **[Use SHOW CARD 4]**

B7.3 About how many days in the past week did you use the computer at work to send e-mail to business-people outside India? **[Use SHOW CARD 5]**

B8.1 How often do you use the computer at work to browse the Internet for information about prices and other business news? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB9.2]

B8.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to browse the Internet for information about prices and other business news? **[Use SHOW CARD 4]**

B8.3 About how many days in the past week did you use the computer at work to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]**

B9.1 How often do you use the computer at work to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB10.1]

B9.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to search the Internet for information about ways to do things better in this business? **[Use SHOW CARD 4]**

Appendix C.3: Phase III Fieldwork, Exploratory Sample

B9.3 About how many days in the past week did you use the computer at work to search the Internet for information about ways to do things better in this business? [Use **SHOW CARD 5**] _____

B10.1 How often do you use the computer at work to download new computer programs to use in this business? [Use **SHOW CARD 3**]

[If the answer is NEVER then go to QB11.1]

B10.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to download new computer programs to use in this business? [Use **SHOW CARD 4**] _____

B10.3 About how many days in the past week did you use the computer at work to download new computer programs to use in this business? [Use **SHOW CARD 5**]

B11.1 How often do you use the computer at work to surf to online web sites for news, sports, or stories about famous people? [Use **SHOW CARD 3**] _____

[If the answer is NEVER then go to QB12.1]

B11.2 About how many days in the past week did you use the computer at work to surf to online web sites for news, sports, or stories about famous people? [Use **SHOW CARD 5**]

B12.1 How often do you use the computer at work to chat online with your family and friends? [Use **SHOW CARD 3**] _____

[If the answer is NEVER then go to QB13.1]

B12.2 About how many days in the past week did you use the computer at work to chat online with your family and friends? [Use **SHOW CARD 5**] _____

B13.1 How often do you use the computer at work to chat online with suppliers? [Use **SHOW CARD 3**] _____

[If the answer is NEVER then go to QB14.1]

B13.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with suppliers? [Use **SHOW CARD 4**]

B13.3 About how many days in the past week did you use the computer at work to chat online with suppliers? [Use **SHOW CARD 5**]

B14.1 How often do you use the computer at work to chat online with customers? [Use **SHOW CARD 3**] _____

[If the answer is NEVER then go to QB15.1]

B14.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with customers? [Use **SHOW CARD 4**]

B14.3 About how many days in the past week did you use the computer at work to chat online with customers? [Use **SHOW CARD 5**]

B15.1 How often do you use the computer at work to chat online with employees? [Use **SHOW CARD 3**] _____

[If the answer is NEVER then go to QB16.1]

B15.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with employees? [Use **SHOW CARD 4**]

B15.5 About how many days in the past week did you use the computer at work to chat online with employees? [Use **SHOW CARD 5**]

B16.1 How often do you use the computer at work to chat online with business-people in other parts of Mumbai? [Use **SHOW CARD 3**]

[If the answer is NEVER then go to QB17.1]

B16.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people in other parts of Mumbai? [Use **SHOW CARD 4**] _____

Appendix C.3: Phase III Fieldwork, Exploratory Sample

B16.3 About how many days in the past week did you use the computer at work to chat online with business-people in other parts of Mumbai? **[Use SHOW CARD 5]**

B17.1 How often do you use the computer at work to chat online with business-people in other parts of India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB18.1]

B17.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people in other parts of India? **[Use SHOW CARD 4]**

B17.3 About how many days in the past week did you use the computer at work to chat online with business-people in other parts of India? **[Use SHOW CARD 5]**

B18.1 How often do you use the computer at work to chat online with business-people outside India? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB19.1]

B18.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to chat online with business-people outside India? **[Use SHOW CARD 4]**

B18.3 About how many days in the past week did you use the computer at work to chat online with business-people outside India? **[Use SHOW CARD 5]**

B19.1 How often do you use the computer at work to buy something online for your personal use? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB20.1]

B19.2 About how many days in the past week did you use the computer at work to buy something online for your personal use? **[Use SHOW CARD 5]**

B20.1 How often do you use the computer at work to buy something online for your family and friends? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB21.1]

B20.2 About how many days in the past week did you use the computer at work to buy something online for your family and friends? **[Use SHOW CARD 5]**

B21.1 How often do you use the computer at work to buy something online for this business? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB22.1]

B21.2 Compared to a year ago, would you say you are using the computer at work more or less or about the same amount to buy something online for this business? **[Use SHOW CARD 4]**

B21.3 About how many days in the past week did you use the computer at work to buy something online for business? **[Use SHOW CARD 5]**

B22.1 How often do you use the computer at work to download music? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QB23.1]

B22.2 About how many days in the past week did you use the computer at work to play download music? **[Use SHOW CARD 5]**

B23.1 How often do you use the computer at work to play video games? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to Section E]

B23.2 About how many days in the past week did you use the computer at work to play video games? **[Use SHOW CARD 5]**

SECTION C

INTERNET CAFÉS USE

C1.1 How often now do you go to an Internet café or cybercafé to use the computers there? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QC2.1]

Appendix C.3: Phase III Fieldwork, Exploratory Sample

C1.2 Compared to a year ago, would you say you go to Internet cafes to use the computers more or less or about the same amount? **[Use SHOW CARD 4]** _____

C1.3 About how many days in the past week did you go to an Internet café to use the computers? **[Use SHOW CARD 5]** _____

C2.1 How often do you use an Internet café to surf to online web sites for news, sports, or stories about celebrities? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC3.1]

C2.2 About how many days in the past week did you use a computer at an Internet café to surf to online web sites for news, sports, or stories about celebrities? **[Use SHOW CARD 5]** _____

C3.1 How often do you use a computer at an Internet café to chat with your family and friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC4.1]

C3.2 About how many days in the past week did you use a computer at an Internet café to chat with your family and friends? **[Use SHOW CARD 5]** _____

C4.1 How often do you use a computer at an Internet café to chat with customers? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC5.1]

C4.2 Compared to a year ago, would you say you are using a computer at an Internet café to chat with customers more, less, or about the same amount? **[Use SHOW CARD 4]** _____

C4.3 About how many days in the past week did you use a computer at an Internet café to chat with customers? **[Use SHOW CARD 5]** _____

C5.1 How often do you use a computer at an Internet café to chat with business-people in other parts of Mumbai? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC6.1]

C5.2 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people in other parts of Mumbai more or less or about the same amount? **[Use SHOW CARD 4]** _____

C5.3 About how many days in the past week did you use a computer at an Internet café to chat with business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____

C6.1 How often do you use a computer at an Internet café to chat with business-people in other parts of India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC7.1]

C6.2 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people in other parts of India more or less or about the same amount? **[Use SHOW CARD 4]** _____

C6.3 About how many days in the past week did you use a computer at an Internet café to chat with business-people in other parts of India? **[Use SHOW CARD 5]** _____

C7.1 How often do you use a computer at an Internet café to chat with business-people outside India? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC8.1]

C7.2 Compared to a year ago, would you say you are using a computer at an Internet café to chat with business-people outside India more or less or about the same amount? **[Use SHOW CARD 4]** _____

C7.3 About how many days in the past week did you use a computer at an Internet café to chat with business-people outside India? **[Use SHOW CARD 5]** _____

C8.1 How often do you use a computer at an Internet café to send e-mail to your family or friends? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QC9.1]

Appendix C.3: Phase III Fieldwork, Exploratory Sample

- C8.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to your family and friends more or less or about the same amount? **[Use SHOW CARD 4]** _____
- C8.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to your family and friends? **[Use SHOW CARD 5]** _____
- C9.1 How often do you use a computer at an Internet café to send e-mail to customers? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC10.1]
- C9.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to customers more or less or about the same amount? **[Use SHOW CARD 4]** _____
- C9.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to customers? **[Use SHOW CARD 5]** _____
- C10.1 How often do you use a computer at an Internet café to send e-mail to suppliers? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC11.1]
- C10.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to suppliers more or less or about the same amount? **[Use SHOW CARD 4]** _____
- C10.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to suppliers? **[Use SHOW CARD 5]** _____
- C11.1 How often do you use a computer at an Internet café to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC12.1]
- C11.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people in other parts of Mumbai more or less or about the same amount? **[Use SHOW CARD 4]** _____
- F11.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people in other parts of Mumbai? **[Use SHOW CARD 5]** _____
- F12.1 How often do you use a computer at an Internet café to send e-mail to business-people in other parts of India? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC13.1]
- C12.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people in other parts of India more or less or about the same amount? **[Use SHOW CARD 4]** _____
- C12.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people in other parts of India? **[Use SHOW CARD 5]** _____
- C13.1 How often do you use a computer at an Internet café to send e-mail to business-people outside India? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC14.1]
- C13.2 Compared to a year ago, would you say you are using a computer at an Internet café to send e-mail to business-people outside India more or less or about the same amount? **[Use SHOW CARD 4]** _____
- C13.3 About how many days in the past week did you use a computer at an Internet café to send e-mail to business-people outside India? **[Use SHOW CARD 5]** _____
- C14.1 How often do you use a computer at an Internet café to buy something online for your personal use? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC15.1]
- C14.2 About how many days in the past week did you use a computer at an Internet café to buy something online for your personal use? **[Use SHOW CARD 5]** _____
- C15.1 How often do you use a computer at an Internet café to buy something online for your family and friends? **[Use SHOW CARD 3]** _____
[If the answer is NEVER then go to QC16.1]

Appendix C.3: Phase III Fieldwork, Exploratory Sample

C15.2 About how many days in the past week did you use a computer at an Internet café to buy something online for your family and friends? **[Use SHOW CARD 5]** _____

C16.1 How often do you use a computer at an Internet café to browse the Internet for information about prices and other business news? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to QF17.1]

C16.2 Compared to a year ago, would you say you are using a computer at an Internet café to browse the Internet for information about prices and other business news more or less or about the same amount? **[Use SHOW CARD 4]**

C16.3 About how many days in the past week did you use a computer at an Internet café to browse the Internet for information about prices and other business news? **[Use SHOW CARD 5]** _____

C17.1 How often do you use computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that? **[Use SHOW CARD 3]**

[If the answer is NEVER then go to QF18.1]

C17.2 Compared to a year ago, would you say you are using computer programs already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that more or less or about the same amount? **[Use SHOW CARD 4]** _____

C17.3 About how many days in the past week did you use a computer program already on the computers at an Internet café to keep track of your sales, inventory, costs, or things like that last week? **[Use SHOW CARD 5]**

C18.1 How often do you use a computer at an Internet café to play computer games? **[Use SHOW CARD 3]** _____

[If the answer is NEVER then go to Part C]

C18.2 About how many days in the past week did you use a computer at an Internet café to play computer games? **[Use SHOW CARD 5]**

PART C

Now we have a few questions about you.

1. How old are you? _____ Years

2. **[Do not ask]** Gender:

a. Male	<input type="checkbox"/>
b. Female	<input type="checkbox"/>
c. Transsexual	<input type="checkbox"/>

3. Please give information on your language abilities. Do you speak, read, or write... **[Ask all]**

Language	Speak	Read	Write
Hindi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marathi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other(s) (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Please give information on your numerical abilities. **[Tick only one]**

a. I cannot recognize or write numbers.	<input type="checkbox"/>
b. I can recognize numbers but cannot read or write them.	<input type="checkbox"/>
c. I can read and write numbers but cannot do any calculations.	<input type="checkbox"/>
d. I can do simple addition, subtraction, and multiplication, etc.	<input type="checkbox"/>
e. I can calculate interest rates, tax calculations, etc.	<input type="checkbox"/>

5. How much formal education have you had?

Primary school	<input type="checkbox"/>
High school/Std. 10	<input type="checkbox"/>
Higher secondary school/Std. 11	<input type="checkbox"/>
Bachelor degree/BA/BSc/BE/BTech/MBBS	<input type="checkbox"/>
Masters degree/MA/MSc/ME/MTech/MS	<input type="checkbox"/>
Diploma	<input type="checkbox"/>
Certificate holder	<input type="checkbox"/>
Never been to a school	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>

Appendix C.3: Phase III Fieldwork, Exploratory Sample

6. Have you undertaken any formal computer education training?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

7. How many landline phones do you have?
_____ **[Write '0' for none]**

8. How many mobiles phones do you have?
_____ **[If no mobile phone, terminate the interview. If at least one, ask Q8A]**

8A. Do you use [any of] the mobile phones **only** for business?

a. Yes	<input type="checkbox"/>
b. No	<input type="checkbox"/>

[If YES ask Q8B]

8B. Why do you use certain mobile phones only for business?

This is the end of the survey.
Thank you very much!

SHOW CARD 1

1	2	3	4	5
Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

SHOW CARD 2

1	2	3
More for business	Less for business	Just about the same amount

SHOW CARD 3

1	2	3	4	5
Very often	Often	Sometimes	Rarely	Never

SHOW CARD 4

1	2	3
<u>More often</u> now than you did a year ago	<u>About the same</u> amount as a year ago	<u>Less often</u> now than a year ago

SHOW CARD 5

1	2	3	4
Every day	On 5 or 6 days	On 3 or 4 days	On 1 or 2 days