Mobile phones: challenges of capability building

Mobile Phones: Challenges of Capability Building

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Introduction

The rapid spread of mobile (cellular) phones in developing countries is increasing access to an enormous range of communication services that are highly valued by the urban and dual populations of these countries. Many of these services make use of software applications that support new forms of online collaboration. Nevertheless, while the diffusion of the mobile phone has been faster than any other information and communication technology in human history, the capabilities for using this technology to its full potential have been slower to develop.[1] Part of the explanation for this lies in the overwhelming emphasis on supply-side initiatives. Diffusion studies, including those focusing on the 'bottom-of-the-pyramid,' can tell us about the rise of mobile phones and some of the characteristics of use and of users, but they cannot tell us whether access to mobiles is contributing to poverty alleviation in developing countries.

Although problems of access and cost continue to present barriers to use, mobile communication is providing a new basis for entrepreneurship and social innovation. The complex challenge of enabling people to acquire the knowledge essential for developing innovative applications that are responsive to their local needs, however, is being neglected. The necessary digital skills include operational expertise and an understanding of information structures when the mobile phone is used as a medium for communication. They also include information search and selection skills, communication and content creation skills, and strategic skills needed to use mobile phones in ways that support individual or professional goals. The widespread failure to acquire these abilities is limiting opportunities for empowerment through the use of mobile phones. This paper considers gaps in the existing evidence-base, examines disconnections between policy and practice, and highlights new opportunities for the development of digital capabilities for mobile phone-based entrepreneurship.

Gaps in the Evidence-Base

Empirical research on the impact of mobile phones in developing countries is fragmented. Many studies focus separately on markets, technology, or social interaction, but they rarely examine a combination of these aspects.[2] It often is assumed that access to mobile networks will enable 'leap-frogging' or 'catching-up' by developing countries, supporting new forms of business or social interaction.[3] Research on capability-building processes related to mobile communication services and platforms, however, is absent from studies on the potential benefits for users in developing countries. Even when research focuses on the characteristics of demand for this technology, it emphasizes the individual characteristics of users rather than the relational networks that facilitate online learning. We know that the significance and nature of mobile phone use vary across developing countries and that differences in usage patterns exist between wealthy and poor countries. For instance, in poor urban areas of Chile "the mobile phone space is not the space of mobile freedom that advertising images and marketing campaigns present."[4] 'Bottom-of-the-pyramid' studies in South East Asia show that social influence within relational networks is a key factor in the decision to adopt this technology. In areas like these, supply-side marketing campaigns encouraging friends and family to use mobile phones might prove to be effective.[5]

It also is essential, however, to consider demand-side strategies because they build the capabilities needed for local individuals and groups to develop entrepreneurial mobile phone applications. The growing availability of open data resources is opening numerous opportunities for developing capabilities through processes of collaborative online learning,

often on a global basis. Data not subject to proprietary ownership rights can be used to start entrepreneurial initiatives in the private sector and to meet social needs. In the case of public health care, where experiments are facilitating consultation and communication between health care workers and locals, the availability of open information networks is balancing access to public information with the need for privacy.[6] Similar networks in veterinary practice, agronomy, and environmental monitoring are being developed.[7]

Online Social Networks

Online social networks are proliferating, providing new opportunities for interactive learning. By manipulating, searching, and experimenting with information, making choices about how to present and visualize data, and engaging in dialogue with others about that content, these new platforms provide a basis for 'integrative' learning through which new types of data can be combined on mobile and other platforms.[8] Although many of these opportunities are based on computer interactivity, an increasing number of 'more-than-mobile' services are making mobile phones a viable option for supporting meaningful integrative learning.[9]

One set of applications that is developing rapidly is the use of geographical mapping and crowd sourcing of real-time data in response to human and natural crises. These initiatives are often responsive to local demand for information and they are providing opportunities for the entrepreneurial provision of digital data platforms on which local information can be placed. For instance, OpenStreetMap is supporting an editable map that can be viewed and edited anywhere in the world and is being used in support of relief work and disaster management.[10] All of these applications involving open or real-time data require users to make creative uses of mobile communication networks.

While it is clear that mobile networks are capable of supporting poverty reduction measures, it is still unclear whether the mobile revolution can support activities involving more complex information-sharing in which intensive data communication and display require the processing capability of the personal computer. Nevertheless, mobile phone applications are extending access to those engaged in entrepreneurial activities and the provision of social services. These applications provide better information about markets, promote the distribution of messages to large numbers of people without the Internet, and enable the development of mobile remittance services. Unfortunately, the lack of attention given to demand-side measures to build user capabilities is limiting the diversity of applications.

Disconnected Policy and Practice

Despite the high level of policy attention that information and communication technologies have received, demand-side considerations are being neglected in strategies to spread mobile technologies in developing countries. There has been an increase in the availability of mobile services in developing countries as a result of declining costs, the global reach of networks, and software applications for many different purposes. The World Summit on the Information Society Declaration on Building the Information Society emphasized that, "all individuals can soon, *if we take the necessary actions*, together build a new Information Society based on shared knowledge …"[11]

The "necessary actions," however, so far have underestimated the fact that capability building involves pre-conditions. Addressing this by developing improved understanding of these conditions, especially those related to facilitating learning-by-collaboration rather than individualized trial and error, is a challenge.[12] Learning through online interaction has the potential to generate mutual advantage in the private sector and in public sectors such as education, health and the environment. Mobile phone networks can play a fundamental role

in the learning process by augmenting collaborations in which online interactions play a central role. This is at the heart of new opportunities for developing countries to strengthen their capabilities to exploit the gains from the application of mobile communication infrastructures.

Capabilities for online entrepreneurship are constructed incrementally. An important factor is the emergence of digital applications supporting the global flow of information and online collaborative working in global value chains. Efforts to build capabilities on the demand-side require specific strategies for building and managing global production networks involving companies and individuals in the coordination of labor in a fluid collaborative manner. These collaborations are important because of the demands of international design, specification, and sourcing of products.[13]

Building Capabilities

The prospects for building capabilities are changing dramatically with the spread of mobile networks and their applications that can support learning by collaboration. With the support of these networks, there is a potential for many countries to establish themselves as hubs if they can create the necessary infrastructure and skills and put associated trade, tax, and legal policies in place. There has been substantial growth of outsourcing alongside the availability of software applications supporting entrepreneurship in business and supply chain management.[14] Platforms for mobile team-working and collaboration, employing resources accessed through mobile phones, are becoming more widely available to individuals and smaller companies in developing countries. These developments provide the foundations for new approaches to knowledge management and learning. Online resources for skill or capability building include manuals for community activists, multimedia training kits, digital literacy resources, training on standard software packages, and region-specific information packages sponsored by donor agencies and companies such as Microsoft.

The generation of innovations and new knowledge through collaboration is a major consequence of building online capabilities. Mobile networks are becoming powerful tools for collecting information that stimulates the imagination and provides clues for new directions in social and commercial activity. When combined with local knowledge, some of this activity is likely to be idiosyncratic, but other activities are likely to become candidates for entrepreneurial initiatives and the development of products and services that can be commercialized, such as mobile networks serving as platforms for other services. This progression is typical of services such as Esoko, a Ghanaian service that allows uploading of market and other data using mobile phones, and AppZone in Sri Lanka, which enables developers to create, test and sell applications which are then promoted by the mobile operators.[15] Demand-side strategies including customization and use of collaborative networking create real prospects for developing countries to generate commercially significant activity.

Digital Capabilities for Entrepreneurship

Online social networks are becoming essential for the filtering, adapting, and exchanging productive information. Recent developments supported by mobile networks and other digital technologies are offering better tools for building and sustaining social networks, but these are not necessarily the tools fit for the purpose of building capabilities for digital entrepreneurship. Online sociability is an end rather than a means when it occurs in support of information exchange activities such as advertising jobs, providing information that is difficult to find, accessing government services, or communicating with friends or family.

Nevertheless, the process of learning through online collaboration to build capabilities for entrepreneurship requires more than these uses of mobile platforms. For individuals to

gain the necessary capabilities they need to move up a ladder involving three important stages:
1) inclusion, involving functional uses, communication, and information access;
2) engagement, involving entertainment, social networking, and transactions; and finally,
3) empowerment, including content creation, virtual interaction, and entrepreneurship.[16]

Each of these stages typically is associated with a progression of activities beginning with basic skills. By ascending this ladder, new skills are mastered. In this context, entrepreneurship is about establishing commercial activities but it is also about the capacity for independent initiative and this may apply to civic, cultural, or political activities.

For example, when high-level online capabilities are in place, market or technology innovations can reduce frictions in the economy, as in the case of the use of mobile phones to reduce waste in Kerala fish markets in India.[17] Innovative uses of 'more-than-mobile' services focus on connecting formerly excluded small enterprises in the economy to high-value agricultural, industrial and service business process outsourcing chains, as is the case with services provided by DesiCrew Solutions in India.[18] Similarly, in Sri Lanka, using mobile platforms to provide market price information, crop advisory services, and weather forecasts is improving export-oriented agricultural value chains. This builds on technology-related capabilities and on the coordination of information collectors.[19]

Demand-Side Initiatives

This capability-building ladder makes it clear that a range of demand-side initiatives is necessary to achieve the level of empowerment for benefiting from access to digital technologies, including mobile phones. In this progression, the use of mobile phones to communicate and gather personal information is only the beginning. As an individual proceeds to the second level of engagement, learning becomes more relational and collaborative. It is not only the basic skill, but also a question of developing capabilities for making choices about which entertainment, social interaction, or transaction to engage in. Interaction with others with similar interests starts to become increasingly important. The local and virtual social communities with which an individual interacts help facilitate the acquisition of skill and in filtering information. These processes of social engagement and collaboration continue in the third empowerment stage, where an individual starts to engage with fellow community members. The motivation for progressing toward online learning through collaboration and entrepreneurship depends on the perceived relevance of online interactions; individuals with interests that are broader than their immediate physical community are more likely to perceive the relevance and benefit of continuing to build their skills. This may lead to the early adoption of new ideas or techniques, and, eventually, to entrepreneurial ideas. In this stage, individuals form relational ties based upon shared interests and purposes that may or may not be 'local.' For instance, mobile applications are being developed to support remote tracking by coffee growers in Costa Rica and are providing information and interactive services that help growers meet fair trade standards. In this case, SourceTrace works with local cooperatives to develop visualization and other tools for supply chain management, building capabilities by coupling locally shared interests with services enabling collaborative working online.[20]

Mobile networks are increasing access to open source software, which offers the opportunity to acquire an understanding of the tools required to create and use advanced software productively in developing regions.[21] Taking advantage of these opportunities requires background knowledge that can be provided by a relatively modest level of technical education.

Developing Capabilities

A prominent example of the development of capabilities for online collaboration is the growth of freelance workers who progress along the capabilities ladder to take on employment engaging in activities from basic image tagging to advanced coding. There has been an increase in the incidence of virtual teams linking small and medium-sized enterprises, especially in low-income countries.[22] For example, the Bangladeshi Software and Information Services Association reports some 10,000 Bangladeshi freelancers who are active online. The majority of them work for clients in the United States and Europe, but they also work for local government institutions, non-governmental organizations, and individuals. They provide services ranging from software development to graphic design, search engine optimization, social media marketing, blogging, and data entry. Projects vary from building electronic commerce websites to entering product information or posting feedback for companies. The revenues generated by more successful freelancers may be in the tens of thousands of dollars, although the average is much lower.[23]

Software applications often emerge from collaborative discussion about the need for and value of new solutions. The importance of building professional networks and of accessing tools for collaboration is increasing both within companies and between companies and their suppliers and customers. Examples include customer relations management software, software for computer supported cooperative work which may be organized around computer aided design and manufacturing software, and software for collaborative document creation. The Chinese government, for instance, is developing the China National Commodity Exchange Center, which has more than five million registered members and supports the exchange of products in twenty-six countries by collecting and distributing information about commodities and all aspects of the trading process as well as providing a system for mobile phone-based payments and information access.[24]

Just as individuals progress along the capability-building ladder from individual information needs to engagement with other users in information sharing and exchange, companies progress from managing their own operations to interacting with their customers and suppliers in creating larger networks. Some of these networks become large scale platforms for market exchange. Access to mobile networks by entrepreneurial companies in low-income countries can thus provide opportunities for learning and for participation in revenue-generating activities.

Conclusion

These kinds of capability-building processes crucially depend on the social context and opportunities for learning. Learning involves a progression from individual skills to collaboration. Without a local community sharing interests and enthusiasm, few people are likely to develop the capabilities or remain motivated to progress beyond the elementary skills level. Progression requires engagement with others with whom an individual identifies and interacts with offline and online. Interactive platforms offered by mobile services are providing increasingly accessible means for this, suggesting that it is timely to introduce demand-side incentives to foster the necessary learning through collaboration online in support these developments.

When the pre-conditions for collaborative learning online exist, people have opportunities to move into freelance employment, driving local demand for digital services, including a growing number of mobile phone applications, and generating income. Thus, individual empowerment based on digital technologies such as the mobile phone is the visible aspect of a major trend that is driving the international division of labor. This, in turn, is opening opportunities for those who are able to progress in building their online capabilities.

When fully developed, these new capabilities strengthen the potential for profiting from relational mobile networks and for coordinating wealth-generating activities within a developing country. This progression, however, is unlikely without demand-side initiatives that sponsor training to encourage the capabilities necessary for interacting using mobile and other digital services.

Notes

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