Leveraging Information and Communication Technology for the Base Of the Pyramid

Innovative business models in education, health, agriculture and financial services

A JOINT REPORT BY

HYSTRA
hybrid strategies consulting

ASHOKA

IN COLLABORATION WITH

TNO innovation for life

SPONSORED BY

afd
AGENCE FRANÇAISE
DE DÉVELOPPEMENT

● Proparco
GROUPE AGENCE FRANÇAISE DE DÉVELOPPEMENT

ERICSSON

orange™

iCCO
Partner to
enterprising people

Authors

Alexandre de Carvalho,
Hystra Network Partner
Lucie Klarsfeld,
Hystra Project Manager
Francois Lepicard,
Hystra Network Partner

Contributors

Alessandra Carozza, AMGlobal
Nicolas Chevrollier, TNO
Chloe Feinberg, Ashoka
Till Jaspert, Claro Partners
Andrew Mack, AMGlobal
Claire Penicaud, Hystra
Bineke Posthumus, TNO

Please direct queries about this report to:
info@hystra.com

HYSTRA
hybrid strategies consulting

Sponsors' foreword

Over the past twenty years, the number of mobile phone subscriptions has risen from 12.4 million to more than 5 billion. The majority of them, equaling 3.8 billion, are in developing countries, where the mobile telecommunications industry has expanded most quickly. Today, even in the most remote areas, people own or use a mobile phone. It is clear that with mobile penetration rates continuously increasing, connectivity – at least for basic voice services – will no longer be a major hurdle in the near future, and development concerns are progressively turning to finding ways to best leverage this connectivity for other services.

Several of the services that can be delivered on telecommunication networks are directly linked to socio-economic development. The focus of this study is the tremendous opportunities that Information and Communication Technology (ICT) offers to provide access to essential services, such as education, healthcare, agro-services or financial services, to underserved populations, especially those at the Base of the Pyramid (BoP) – i.e. the billions of people living with less than a few dollars per day.

In the summer of 2010, in the pursuit of leveraging these opportunities, following discussions initiated by France Telecom, Hystra brought together five actors sharing the willingness to make this promise happen:
- *AFD (Agence Française de Développement),* the French Aid Agency and Proparco, its private financing arm,
- *Ericsson,* the Swedish world-leading provider of telecommunications infrastructure and services, with business in 180 countries,
- *France Telecom-Orange,* a world's leading telecommunications operator, headquartered in Paris and serving consumers in 35 countries, including 17 in Africa and the Middle East,
- *ICCO,* a Dutch non-profit organization providing funding and field support to development projects in emerging countries, and
- *TNO,* the Dutch independent research organization working on innovation for development.

These five sponsors have entrusted Hystra to conduct this study on mobile services and business models for the Base of the Pyramid (BoP), in collaboration with Ashoka, the international network of social entrepreneurs, and TNO, and with the support of AMG, a consulting firm expert on ICT for Development (ICT4D) projects.

The sponsors of this study believe that independent social entrepreneurs or intrapreneurs (who initiated these projects from the inside of large companies) are a key source of inspiration, and that looking at their projects in depth will allow to identify promising business models and understand the barriers to scale that many projects are facing in this sector.

After reviewing more than 280 projects, this study has grouped the diversity of models seen into 4 different clusters:
- models in which end-users access the technology themselves,
- models leveraging local agents as intermediaries between the technology and end-users,
- innovative initiatives leveraging the power of the "crowds" in a two-way exchange between the developed and developing worlds, through so-called crowdsourcing or crowdfunding, and finally
- financial services requiring a robust secured platform accessed either by end-users or intermediary agents, or both.

Within these clusters, 16 initiatives of the most ground-breaking business models set up to date, have been analyzed through field visits, interviews, and experience sharing during workshops. These models are presented as case studies in this report, highlighting that promising business models can allow the sustainable large-scale development of ICT-based services for the poorest.

A conclusion from this work is that entrepreneurship is key to starting successful services, while collaboration and the construction of an ecosystem offering a range of services are key to scaling. AFD-Proparco, Ericsson, France Telecom-Orange, ICCO and TNO are and will continue fostering both entrepreneurship and collaboration, to support the development of affordable services aimed for the poorest of the population. This is the reason why we have decided to make the results of this report public.

We hope you will find valuable insights to move forward with us in multiplying the impact of market-based approaches leveraging ICT for development.

Sincerely,

Caroline Cornu, Executive Director, External Relations and Partnerships, AFD-Proparco

Elaine Weidman-Grunewald, Vice President, Sustainability and Corporate Responsibility, and **Arun Bhikshesvaran,** Vice President Marketing and Chief Marketing Officier, Ericsson

Denis Guibard, Vice-President, Sustainable Development, Products & Services, France Telecom-Orange

Machteld Ooyens, Head of the Policy and Development Department, ICCO

Nicolas Chevrollier, Deputy programme manager "Innovation for Development", TNO

Introduction

The developing world is on the brink of entering the Internet era. And it will be mobile based.

This breakthrough is hoped to transform lives even more than it has for the developed world over the past 15 years.

In our previous and on-going Hystra-Ashoka joint work we have looked at improving a series of essential services for the Base of the Pyramid where providing access –to Energy, Housing, Water, etc. – was the end result. In this case, given its potential transformational power, we decided to look at a means – ICT – rather than at an end as such. We decided to apply our methodology in looking at how ICT could actually foster a quantum leap of evolution in servicing development. We selected 4 areas, essential for developing countries, as well as potentially highly responsive to a strategic use of ICT: Education, Health, Agriculture/Rural Development and Financial Services.

These areas have indeed generated hundreds of initiatives from different organizations trying to leverage ICT for social impact. Pioneers are showing the way, following the tremendous success from mobile operators in bringing connectivity to so many.

However, very few of them have had success in reaching scale, despite the special adequacy of technology for scaling up. It is in the hope of finding solutions to that limitation that we undertook to identify the solutions that work best, understand what hinders their growth and craft strategies that can help bring these innovations to scale.

We have been fortunate to assemble a consortium of key players representative of a variety of stakeholders in the field of Technology and Development, from the public, citizen and private sectors.

Integrating their different perspectives has been critical in shaping this report. Scaling up these business model innovations will not only grow a few organizations, it will create new industries and bring knowledge and services to which the poorest never had access before. For this to happen, all types of players must take part in the effort required: public authorities need to craft and implement effective regulations that integrate the possibilities of technologies, local business entrepreneurs need to invest their money and energy in innovative products, strategic philanthropists and development agencies need to support industry building and awareness and education efforts, and large corporations need to innovate new business models or support existing ones to scale. None of them can succeed on their own.

This is a time for innovation and collaboration. We hope this report will contribute to making this happen.

François Lepicard and Alexandre de Carvalho, Hystra

Valeria Budinich, Ashoka

Acknowledgements

Table of contents

ASHOKA FULL ECONOMIC CITIZENSHIP

HYSTRA
hybrid strategies consulting

1. About this project

1.1 Scope of this study: Market-based ICT services for the BoP in healthcare, education, agriculture, and financial services

The project "Leveraging ICT for the BoP" is an effort to broaden the understanding of the range of possible ICT-based services bringing development to the poorest population, the Base of the Pyramid (BoP). The BoP as defined by The Next 4 Billion[2] is the four billion people living on an annual per capita income that is less than $3000 in purchasing power parity (PPP).

ICT has become an ever-present feature in the developed and developing worlds in the past decade, including in the development field. In this report, we do not study projects that are "only" increasing connectivity; rather we focus on projects offering value-added ICT services with a development impact. For the sake of feasibility, we limited our scope to 4 sectors of "development" where ICT has already shown it could play a key role: healthcare, education, agriculture, and financial services.

Other areas such as human rights and governance benefit from better transparency and accountability through the use of ICT; management of emergency aid can also be tremendously enhanced via mobile phones. Though we recognize the value of these approaches, they are not studied here.

This investigation has focused on market-based solutions. Public investment, subsidies, multilateral spending and charitable giving have all figured in ICT-based approaches to development around the world. This study highlights initiatives – launched by for or not for profit actors – that acknowledge the fact (now popularized by the inventors of micro credit) that the poor do pay for service, as well as the realization that giving things away for free makes people value them less, and thus possibly compromises the sustainability of the approach.

1.2 Methodology: Learning from what works and could be scaled

Instead of adding to the already very complete analysis of how ICT access is evolving or of the new promising technologies emerging, our methodology is to learn from "what works" as full projects (as opposed to technologies) in the field of ICT for development (ICT4D). Thus we surveyed more than 280 ICT-enabled initiatives across the world, looking for innovative business models with concrete proof of concept on the ground, to understand what made them successful and what the obstacles to their generalization were. The team also interviewed more than 20 industry experts, in addition to 20 experts within the organizations of this study's sponsors.

Projects have been selected by scanning the networks of Ashoka, open sources such as mobithinking.com or mobileactive.org, projects listed by development and multilateral agencies, internal corporate projects, and other sources. Out of the more than 280 ICT4D projects reviewed for this study, we first took out the projects which were fully grant-based with no market-based component, were still in the feasibility study stage, or were "dead pilots", i.e. finished pilot projects with no follow-up after two years. We were left with less than half of the initial pool of projects. Out of the 138 remaining ones, 16 were selected for in-depth study as representative of the most interesting market-based innovations using ICT for development in their respective fields.[3]

These 16 projects reflect market-based solutions either already at scale (i.e. with more than 10,000 clients to date), or with high potential to reach scale (for initiatives started in 2009 or later). Although the projects highlighted here are strong projects, the report is not exhaustive and is not meant to put forward certain enterprises over others. The goal is to display representative examples of the various types of successful and viable approaches that emerged of our initial project screening, rather than to rank these initiatives.

---

[2] *The Next 4 Billion. Market Size and Business Strategy at the Base of the Pyramid*, World Resources Institute and International Finance Corporation, March 2007. Amounts in dollar 2005 PPP.

The 16 case studies of this report are presented below:[3]

Case studies in this report by business model and sector [3]
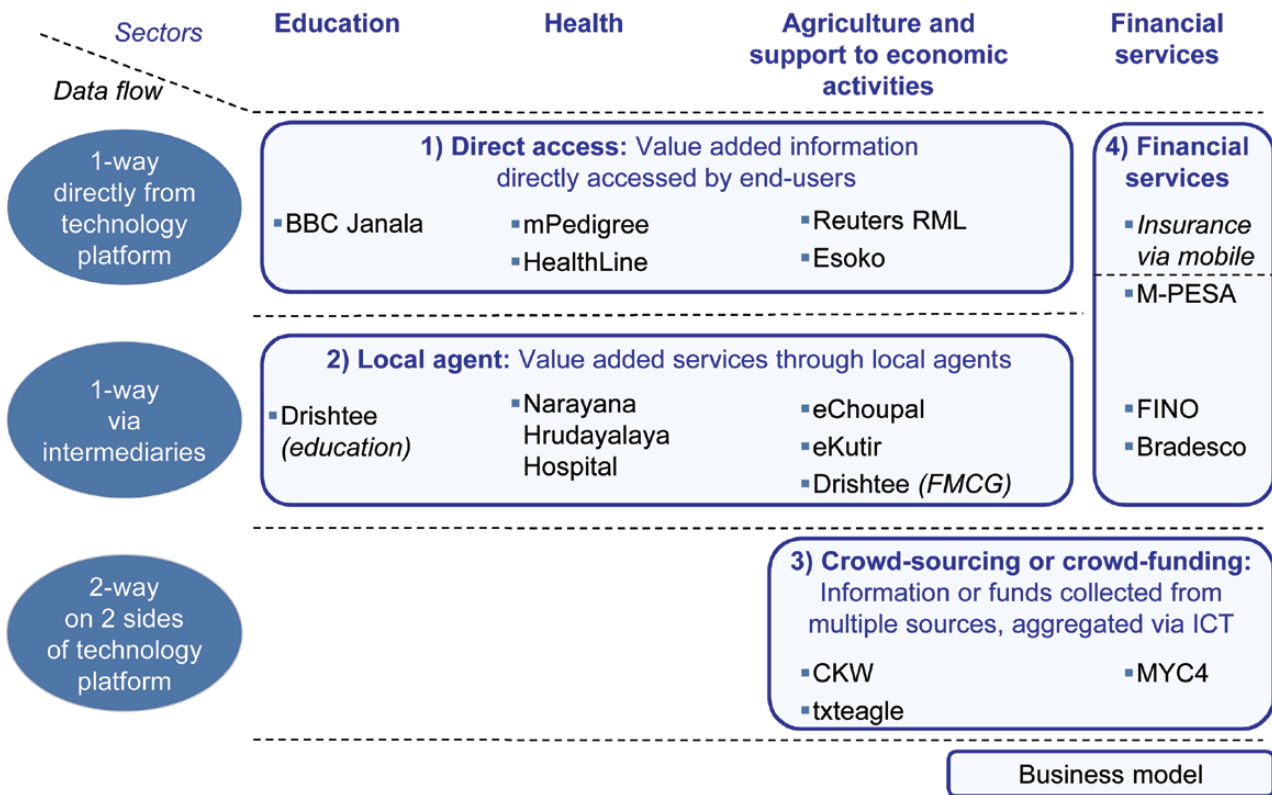
As shown on this illustration, we opted for a twofold analysis. On the one hand, we analyzed projects based on their business models. This cross-sector approach allows for cross-fertilization and for a discussion on potential synergies across sectors. For each of the business models, we identified the obstacles to scale and way forward to further extend their reach. The four business models are:

▪ Value added information directly accessed by end-users

▪ Value added services accessed through local agents

▪ Crowdsourcing / Crowdfunding

▪ Financial Services (requiring a robust secured platform and often a combination of local agents and direct interface between technology and end-users).

The full case studies are presented at the end of the corresponding sections of this report.

On the other hand, we analyzed projects by sector: education, health, agriculture, and financial services. The latter is a sector in itself, like health or agriculture. Yet because it deals directly with people's money, this sector faces specific safety and regulation requirements that influence its business model in specific ways and convinced us to treat it as a separate business proposition. Overall, this sectorial approach allows for assessment of the impact that ICT can have in a given sector. It draws on the case studies included in this report but also on other examples screened during the initial phase of this project, to provide as comprehensive an overview as possible of each sector.

We recognize that the theoretical borders drawn here between business models and sectors are thin. As will be seen in this report, many projects modify their business models to better serve existing clients and extend their reach, often adding new services in new sectors over time. We hope however that the classification chosen will allow the reader to gather new insights on the vast field of market-based ICT4D.

---

[3] This report initially included a case study on a mobile-based insurance service, which we were asked to remove just before publication due to unexpected issues with possible legal implications. This report still builds on the lessons learnt from that project as well as the 15 others, but only 15 case studies are presented in this document. "Insurance via mobile" on the graph refers to that 16th project.

Each of the projects studied in depth is evaluated against three criteria:[4]

1/ IS THE SOLUTION SOLVING THE PROBLEM?

- Is it improving the targeted field of development (education, health, financial services, agriculture)?
- Is it easy to use, properly used and accepted?
- Is socio-economic impact demonstrated?
- Is the environment taken into account?

The combination of these four questions offers some surprising insights. For example, most projects studied do not rigorously measure their impact or do not even mention the environment.

2/ IS IT ECONOMICALLY VIABLE?

- Is it affordable for the BoP?
- Is the financing scheme sustainable?
- Is it a profitable business for the various private and social sector partners involved?
- Is it bringing new economic opportunities to the BoP?
- Does it require subsidies?

These questions reveal a diversity of financing strategies. Many projects start with some level of grants, and not all move to a purely commercial model. Several projects, rather than have end-users pay directly for the service, are financed via a third party with an economic stake in the service, or financed internally as an investment allowing cost-savings.

3/ IS IT SCALABLE AND REPLICABLE?

- Is the operational model scalable?
- Are there requirements to replicate it in other environments?

This criterion focuses on 1) the possibility of the model to scale up in places where it started, based mostly on internal capabilities and skills, and 2) the likelihood that the model could be replicated in other geographies, based on the existence of specific external conditions for the projects to work.

The report reflects a co-creation process with social entrepreneurs, ICT experts, experts of each of the development fields within our scope (education, health, agriculture and financial services) and business leaders. The cases in particular have been discussed with the contacts from each project.[5]

The names of some of the projects profiled in this report will be familiar to those who follow the field of ICT4D, or one of the development fields studied. The team hopes that our methodology will provide new insights to seasoned experts and new entrants alike.

1.3 Why this report: A high potential for economic development

The rapid development of ICT has raised a lot of hope in the development field that emerging countries might leapfrog some of the progresses made over decades in the developed world.

On the one hand, most of the developed world is now fully ICT-equipped; operators and telecommunication equipment manufacturers are struggling to keep average revenue per user and hardware sales high now that their

---

[4] Contrary to the report "Access to Energy for the BoP" published in 2009, projects are not graded in this report, because they can hardly be compared one to another given the variety of sectors – and type of impact – that they have and aim to have. The evaluation is a qualitative one, summarized in the "Sustainability" paragraph of the executive summary and detailed in the "Evaluation framework" box of each case study.

[5] Except for Bradesco Banco Postal Postal, which was discussed with Mark Pickens, CGAP expert.

markets are saturated. On the other hand, three elements of context point at a strong opportunity to use ICT for development: 1) the extremely rapid spread of mobile phones in the past decade has equipped two thirds of our planet's inhabitants, most of them in the developing world; 2) internet access has increased to 1.7 billion users in 2010; 3) BoP populations need cash - and thus economic development - to afford these technologies. These elements make the question of market-based approaches leveraging ICT for development, particularly timely for private players willing to grow in these markets, for development actors willing to increase their impact through the amplifying effect of technology, and of course for the populations themselves who could benefit from this range of newly accessible services. Economic development and the market of ICT devices and services will need to grow hand in hand to realize their full potential. Most of the examples featured here do not display significant technology innovation; rather they have found innovative, progress-making ways to leverage technology to bring development to those who need it most.[6] They offer healthcare or education solutions to those who previously had no alternatives, improved economic opportunities to the BoP through new revenue sources or significant savings; in any case a tangible improvement over the status quo.

1.4 The status of the environment

In the course of this study we realized that many projects, even among those most at scale, did not even mention the environment as one of their concerns. However we are aware of the importance that environmental aspects will have on the long-term impact and success of projects, and thus we have integrated it to the question "is the project solving the problem?" of our case studies. Today phone batteries are a growing concern especially in Africa. The sponsors of this study are among the actors that have started addressing this issue: AFD for example has commissioned a study entitled "Toward a sustainable solidarity management for electronic waste in Africa",[6] Ericsson is one of the partners assisting the Ghana government in setting up proper recycling facilities for e-waste, while Orange has started supporting the creation of organizations and processes managing

mobile handsets waste in several African countries. Another environmental issue is that of power necessary to run ICT appliances, in environments that the grid does not yet reach and where fuel generators are the main – expensive and environmentally unsustainable – alternative. We urge practitioners who will use lessons from this report to take this aspect into account when designing their programs.[7]

1.5 Sponsors

This work has been sponsored by five organizations: AFD-Proparco, Ericsson, France Telecom-Orange, ICCO and TNO.

Agence Francaise de Developpement (AFD) - Proparco

AFD is a bi-lateral public development finance institution that has worked to fight poverty, support economic growth and promote and protect global public goods in developing and emerging countries and the French Overseas Provinces, for 70 years.

AFD executes the French government's development aid policies, in such diverse sectors as schooling, maternal healthcare, help for farmers and small-business owners, clean water supply, infrastructure construction, and fighting climate change, among other concerns.

PROPARCO, its subsidiary dedicated to private-sector development, acts as a catalyst for private investment in emerging and developing countries, in growth and sustainable development. Its aim is to support job creation, business competitiveness and entrepreneurship. PROPARCO ranks among the world's major bilateral development finance institutions.

Through offices in more than fifty countries, AFD provides financing and support for development work initiated by nation-states, local governments, public- and private-sector enterprises, and non-governmental organizations. AFD proposes a wide range of tools[8] to respond to the

---

[6] French title: "Vers une gestion durable et solidaire des déchets électroniques en Afrique", by AMSN ("Agence Mondiale de Solidarité Numérique" or " World Digital Solidarity Agency")

[7] Environmental impacts are discussed more thoroughly on p.196

[8] Each beneficiary and partner receives tailored financing and services. In 2010, AFD approved more than €6.8 billion for financing aid activities in developing and emerging countries, including €957 million for the French Overseas Provinces. Within the group activity, PROPARCO committed €940 M. The group funds will help 13 million children go to school, improve drinking water access for 33 million people and provide €428 million in microloans benefiting more than 700,000 people. Energy efficiency projects financed by the AFD group in 2010 will save nearly 5 million tons of carbon dioxide emissions annually.
AFD creates strong working relations with various international aid actors, particularly bilateral donors, the European Commission, United Nations agencies, multi-lateral development banks (World Bank, African Development Bank, Asian Development Bank), local governments, foundations, private-sector companies, and non-governmental organizations. These partnerships promote good practices and joint actions, such as project cofunding, for greater aid coherence and effectiveness. Through research and other forms of knowledge creation, AFD also leverages its intellectual assets and those of its partners, in order to weigh in on international debates. PROPARCO has issued several publications about the Telecom sector in its magazine Private Sector and Development, and particularly one addressing the problematic "What are the economic and social impacts of the mobile phone sector in developing countries?".

specific needs of its aid beneficiaries: grants, budgetary aid, subsidized or market-rate loans, guarantees, equity and/or capacity-building technical assistance.

Ericsson

Ericsson is the world's leading provider of technology and services to telecom operators.

Ericsson is the leader in 2G, 3G and 4G mobile technologies, and provides support for networks with over 2 billion subscribers and has the leading position in managed services. The company's portfolio comprises mobile and fixed network infrastructure, telecom services, software, broadband and multimedia solutions for operators, enterprises and the media industry. The Sony Ericsson and ST-Ericsson joint ventures provide consumers with feature-rich personal mobile devices.

France Telecom-Orange

France Telecom-Orange is one of the world's leading telecommunications operators with 170,000 employees worldwide, including 102,000 employees in France, and sales of 11.2 billion euros in the first quarter 2011.

Present in 35 countries, the Group had a customer base of 215.9 million customers as of 31 March 2011, including 141.6 million customers under the Orange brand, the Group's single brand for internet, television and mobile services in the majority of countries where the company operates. As of 31 March 2011, the Group had 156.7 million mobile customers and 13.9 million broadband internet (ADSL, fibre) customers worldwide. Orange is one of the main European operators for mobile and broadband internet services and, under the brand Orange Business Services, is one of the world leaders in providing telecommunication services to multinational companies.

Acting as a responsible company, Orange is committed to contribute to the social and economic development where it operates. This is done in three ways: by deploying infrastructure and basic communications services, by offering value added services to meet key needs such as education, health or rural development, and by supporting the development of the local innovation and entrepreneurial ecosystems through university partnerships, participation in the creation of local incubators or funding of awards granted to innovative projects. The need for improvement in the identification and qualification of innovative solutions for the BOP, that are sustainable and scalable led Orange to suggest to Hystra to launch this project.

For more information (on the internet and on your mobile): *www.orange.com*, *www.orangebusiness.com*, *www.orange-innovation.tv*

ICCO

ICCO is the Dutch interchurch organization for international cooperation. ICCO's mission is to work towards a world in which people live in dignity and prosperity, a world where poverty and injustice are no longer present. We give financial support and advice to local organizations and networks across the globe that are committed to connect poor people to value chains and empower excluded groups in societies. Rather then supporting individual projects, ICCO believes in changing systems through a programmatic approach. ICCO works in 41 countries in Africa, Asia and Latin America in partnerships with civil society organizations, including development organizations, cooperatives, churches and businesses.

In the area of ICT for Development we participate in the Connect for Change (C4C) Alliance with four other Dutch development organizations, lead by IICD in The Hague. ICCO manages the program "ICT for Economic Development" of C4C, with the objective to improve the income and employment opportunities of small-scale farmers and entrepreneurs through better access to markets and financial services and improved productivity by using ICT.

TNO

TNO also contributed to this report – see next section on authors.

1.6 Authors and contributors

The project took place over the course of 8 months in 2010-2011, led by a team of Hystra consultants and involving Hystra network partners, Ashoka experts and entrepreneurs, TNO contributors, and Andrew Mack Global (AMG) experts.

HYSTRA
hybrid strategies consulting

Hystra works with business and social sector pioneers to design and implement hybrid strategies, innovative business approaches that are profitable, scalable and eradicate social and environmental problems; and combine the insights and resources of business and citizen sectors.

Hystra itself is a hybrid organization, a for profit tool for social change. Hystra consists of a core team of full time consultants and of a growing network of partners already present in 12 countries. For more information, visit www.hystra.com.

ASHOKA FULL ECONOMIC CITIZENSHIP

Ashoka Innovators for the Public: founded in 1980, Ashoka is the world's working community of more than 3,000 leading social entrepreneurs. It champions the most important new social change ideas and supports the entrepreneurs behind them by helping them get started, grow, succeed, and collaborate. As Ashoka expands its capacity to integrate and connect social and business entrepreneurs around the world, it builds an entrepreneurial infrastructure comprised of a series of global initiatives that supports the fast-growing needs of the citizen sector. Ashoka's vision is to create change today, for an everyone a changemaker society to become the reality of tomorrow. For more information, visit www.ashoka.org.

TNO innovation for life

TNO, the Dutch Organization for Applied Scientific Research, connects people and knowledge to create innovations that boost the sustainable competitive strength of industry and well-being of society. As an independent non-for-profit research organization, innovation with purpose is what TNO stands for. TNO transfers its innovative knowledge and experience into emerging and developing countries via its corporate program dedicated to "Innovation for Development". The vision of this program is a world where social challenges in developing and emerging economies are solved by local people deploying sustainable innovative solutions. TNO contributes with its core competences: high-level expertise in technical and social innovations, connecting people and managing system innovations and transitions in various sectors (e.g., Energy, ICT, Food and Health). Through a co-creation process involving partners and stakeholders TNO launches market-based and community-based innovations to ensure a sustainable socioeconomic impact for low-income groups. For more information visit: www.tno.nl/I4D.

amGLOBAL CONSULTING — more business, better business in emerging markets

AMGlobal Consulting is an innovative, specialized consulting firmed dedicated to helping companies do more and better work in Emerging Markets, with a special focus on Africa and Latin America.

With more than 25 years global experience and clients from Fortune 10 companies like Chevron and Oracle to new technology firms, donor agencies and NGOs, AMG has built a reputation for unlocking sustainable opportunities in some of the world's most exciting new markets.

AMGlobal helps clients enter new markets and do so in a socially responsible way, creating innovative CSR and social outreach initiatives, and bringing the best of new technology – including internet services and m-Health – to address crucial problems worldwide.

HYSTRA
hybrid strategies consulting

2. Executive summary

Market-based solutions leveraging Information and Communication Technology (ICT) for the Base of the Pyramid (BoP): A very dynamic field… with stronger rhetoric than reality

ICT has long been talked about as a lever that would enable developing countries –and particularly the least developed ones – to take "shortcuts" to development by using the latest generation of equipment and software, hence avoiding the decades of trial and error that developed countries have gone through. Indeed **ICT can deliver information and expertise to people who do not have either physical or financial access to these resources, and help remote BoP citizen consumers and entrepreneurs make significant improvements in their lives. And today seems to be the right moment, when connectivity has extended sufficiently for this wave of "socially-beneficial" services to ride efficiently on technology:** 90% of the world population now has access to mobile networks, and mobile phone penetration rate in developing countries reached 68% in 2010, with 3.8 billion mobile phone subscriptions in these markets.[9]

However, **ICT is no "silver bullet."** In this report we have looked at four sectors of ICT4D (ICT for Development): education, health, finance and agriculture. While there is a wide variety of viable or partly viable business models, **more than half of the 280 projects screened for this study were still young and/or not financially sustainable.** The field of ICT4D is nascent, from the oldest proven projects using computers (such as eChoupal and Drishtee for example) dating back to the early 2000's to the new business models of today taking advantage of the recent spread of mobile phone – the prominent tool of ICT4D. **Projects that have reached the "million customer landmark" remain the exception.** As mobile phone development is recent and on-going, it is still too early to speak about results in a definitive manner.

Additionally, **many ICT4D projects have a short lifespan, many being donor-funded and donor-driven pilots lacking an identified, economically viable, long-term value proposition.** Many ICT4D initiatives completely rely on donor funding for financing (136 initiatives studied here), while some use some measure of subsidies in their operating models (35). The remaining projects, though possibly market-based today, often have used grants in their initial phases to grow. Many projects have mistaken population need for consumer demand,

providing a service that the targeted end-users or beneficiaries were not willing to pay for. The result is the creation of business models that, while well intentioned, were not sustainable.

Another key challenge faced by ICT4D projects and their proponents **is that the direct impact of ICT on development projects is challenging to single out and measure.** By nature, even projects that would not have been possible without ICT encompass other dimensions beside the technologies themselves, and often the ICT component is not entirely devoted to social purposes. For example, Drishtee, an Indian social enterprise which has set up rural IT kiosks, uses its computers for ICT training, but also as internet spots for other purposes for villagers, and at the same time the Drishtee model encompasses non-ICT services such as the physical delivery of goods. This makes it difficult to assess results of ICT itself and take action to improve the ICT component of development projects.

Various levels of financial viability, with more viable cases in finance and rural development

While not always the panacea, a number of the cases studied can have a significant social and economic impact, from lower costs of money transfers to increased agro-productivity and revenues, to enabling cardiac care for the poorest or educating the most remote.

In order to better understand the common barriers to scale faced by these initiatives across sectors (finance, agriculture, health and education), we organized our in-depth analysis of 16 ICT4D examples in four cross-sector clusters, based on the business models of these cases:

▪ **Value added information directly accessed by end-users:**
   Services directly accessed by end-users are usually delivered over a mobile platform; end-users interact directly with the technology to access the service. Such services must be customized, i.e. culturally relevant and offering either localized or personalized information, to be adopted by the local population. They can then have significant positive socio-economic impact on the BoP, from saving lives with relevant health advice to significantly increasing agro-revenues with information on both prices and best practices.
   Building such a tailored offer requires time (typically several years) and investment in the millions of dollars;[10] registering enough customers to justify this high initial

---

[9] *Measuring the Information Society – 2010, International Telecommunication Union (ITU), 2009 and The World in 2010: ICT Facts and Figures, ITU, 2010, www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf*

ASHOKA FULL ECONOMIC CITIZENSHIP

investment and keeping them active additionally require high on-going marketing expenses.

Players setting up such services must be aware that breakeven will take years and must carefully balance investment in fine-tuning their offer and marketing expenses, to register a sufficient number of clients. Additional challenges include retaining topical experts as staff in a teleservice operation which they may not find motivating or rewarding enough, and the need for dual approval by both ICT and sectorial legislators – yet financial rewards in case of success are significant as the marginal cost of service delivery to one more client is quasi-null.

▪ **Value added services accessed through local agents:**

These services are provided via "local agents", i.e. people with a minimum of education who act as the interface between technologies and end-users. Compared to "direct access", this model overcomes the need for technology ownership and minimum literacy level, and can thus potentially reach deeper into the BoP. It can also offer more extensive and complex services than direct access as it includes a human intermediary between the technology and the end-user. Such services can either be very specialized, such as telemedicine consultations, or can use the physical infrastructure in place for their agent network to cater to a range of needs – not necessarily all ICT-based. This "diversification" is a necessity for local agents to remain economically viable today, since only selling "ready made" information is not a strong enough value proposition against what cell phones can increasingly offer via direct access models.

This model requires smaller initial investments than the direct access model to design tailored technology services, as local agents do the last mile customization. However it needs a sustained financing mechanism for the initial set-up costs of each agent (including technology, but also the cost of selecting and training agents). Once established, trusted agents (typically chosen among opinion leaders) can easily sell new services, thus not requiring as heavy marketing expenses as direct access models do. This model can also benefit from multiple sources of revenues due to its wide range of services – from fees for expert consultations to commissions on products sold through this channel.

Challenges are thus to fund expansion (rather than the initial service development) in terms of financing new agents as well as training them to become trusted and informed sales people, and to find "aligned" partners to offer a wide enough range of relevant services. Additionally, as each agent must typically serve several hundreds of people to be viable, this model will only make sense in dense enough areas.

▪ **Crowdsourcing / Crowdfunding models:**

Crowdsourcing models treat the BoP as participants in a value proposition: doing small tasks or gathering local information aggregated by technology for larger institutions, against compensation. Crowdfunding models match BoP entrepreneurs without access to traditional finance and investors looking for small business opportunities. Both models thus directly bring funds to the BoP.

These models, still young, are fine-tuning their value proposition. As they reduce costs of gathering data (or of screening investment opportunities), they should be able to redirect these cost savings towards payments for the service they offer.

The key challenges ahead are the scale up of their back-end for large quantity of information from numerous sources, and the recruitment and on-going motivation of trustworthy "crowd" participants who will source reliable and quality inputs.

▪ **Financial Services:**

Financial services offered via ICT can either be:
- a substitute to existing practices (e.g. mobile money transfers replacing physical money transfers, or loan repayments through cards at point of transactions instead of in-person payments) ; or
- an entirely new practice for unbanked populations (e.g. life insurance, or "mesoloans"[11] for social entrepreneurs).

In both cases they require a robust secured platform and either local agents to sell the service initially and manage the cash, or/ and a direct interface between technology and end-users. They must create trust in the technology and - when agents are needed - in the agents, for example by leveraging existing trusted networks such as airtime resellers or post office agents.

The business models seen tap into various (and generally multiple) sources of revenues: from government for social transfers channeled more efficiently via mobile phones or small shops equipped with IT, to insurance companies for the sale of new micro-insurance products to the BoP, to telecommunication operators when the service increases their customer retention, to end-users via fees on their financial operations.

Moving forward, existing initiatives that use agents will need to densify and better secure their agent network to make their offer easily accessible to all. This implies often first to piggyback on existing networks, then to create new ones for a second step of expansion, as well as to improve cash management to avoid that these agents bear the risks that their clients now avoid, of carrying cash.

---

[10] Though in theory new development platforms should allow faster and cheaper development of services and applications, the cases seen in this report have all struggled for at least a year to build a suitable technical infrastructure.

[11] i.e loans for amounts that are larger than microcredit amounts, and lower than what traditional banks would offer.

HYSTRA
hybrid strategies consulting

Governments can play a large role in promoting such services through explicit policy support or even by using these services for their social transfers, while companies launching these initiatives should be aware that they will need to invest both in increasing financial literacy to sell complex services such as insurance, and in sustaining customer relationship to maintain users active.

As shown on the graph below,
1) there is an equivalent proportion of business models based on direct access to technology or on a local agent intermediary, that have survived the pilot phase and use some type of market mechanism;
2) the different sectors studied display distinct levels of maturity in terms of encountering economically viable mechanisms, whatever business models they use.

"Financial services" is the most mature area in market-based ICT4D projects

Number of projects in database: ☐ Tested market-based mechanism   ☐ Fully grant-based, "dead pilots" older than 2 years or feasibility studies

	Tested market-based mechanism	Fully grant-based
Health	20	83
Financial Services	48	9
Agriculture	30	23
Education	10	11
Multiple	7	4
Other Economic Activities	9	2
Other	14	10

	Tested	Fully grant-based
Africa-Middle East	48	74
Asia	55	42
Central-Latin America	21	9
Global	12	10
Europe - North America	2	7

	Tested	Fully grant-based
Direct Access	52	64
Local agent	33	56
Financial Services	46	6
Crowdsourcing/funding	7	6
Other		10
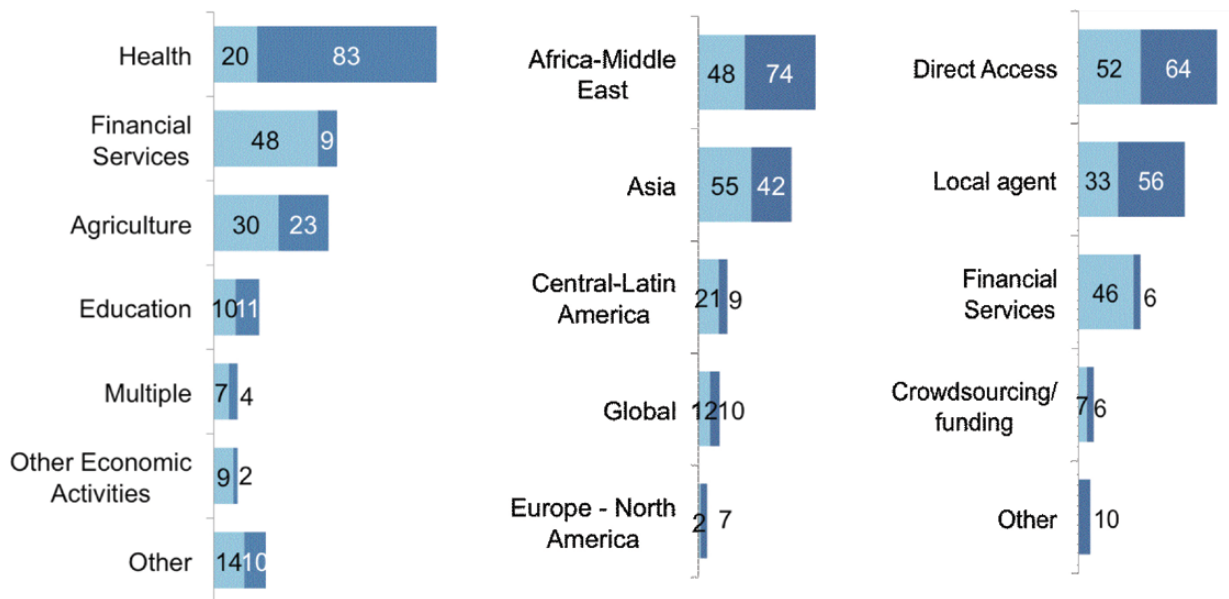
Note: This database does no include "technology projects" such as data collection softwares, that were listed separetely as out of scope

- In **finance**, where the need is that of 2.5 billion unbanked adults, momentum is building in the range of services delivered to the BoP as well as in the number of initiatives: money transfer systems are being complemented with account holding, lending, and insurance (at least 3 programs of insurance via mobile phones were launched in the past 6 months). There are now more than 80 mobile money services around the world, purely market-based. Successful projects have grown to reach more than 5 million customers each (up to 28 million in the case of FINO).

- In **agriculture and rural development,** a variety of fairly large-scale and mature ICT-enabled projects demonstrate economic viability and provide significant social and economic value. Such projects are directly linked to income-generating activities (for example providing better selling opportunities for agro-products), making their value easily visible for end-users. In our study, 30 projects out of 53 agro projects identified

were partly market-based and still running. The largest projects have impact on several million people.

- **Healthcare** is an extremely dynamic sector of ICT4D, but to date has mostly attracted donors. Out of the more than 100 projects in ICT4health identified for this study, only 20 were at least partly market-based and had survived the pilot phase. While donor projects were often focused on awareness campaigns or health data gathering and analysis, market-based approaches focused on remote diagnosis or drug authenticity verification. They serve up to a few million clients in the case of basic information, and several hundred thousand customers in the case of specialized remote diagnosis.

- At the other end of the spectrum, there are very few **education** projects with truly market-based approaches targeting the poorest – be it BoP children or adults who still need education and professional training.

We found only 21 ICT4D projects specifically focused on education, less than half of which had at least some market-based component. Education was included in the business models of specific projects mostly as training and to help build the capacity of adults. However, some not-for-profit projects (e.g., MoMath) and the success of BBC Janala (providing paying English lessons to several million Bangladeshis over multiple media platforms) have demonstrated that demand for general education support is emerging. Yet without government procurement it remains to be proven that there is sufficient purchasing power at the Base of the Pyramid to pay for the development costs of ICT-based education (support) services. What is missing at this stage is a demonstrated commitment by most governments to procure education-supporting services from private providers.

Entrepreneurship is key to starting successful services, while cross-actor and cross-sector collaboration is key to scaling

Interestingly, across sectors and business models, successful projects share common characteristics:
- They are **focused on the ability and willingness to pay of their customers**, rather than on externally identified social needs and supposed demand.
- They are **built from the ground-up through a trial and error approach**, flexibly evolving over time based on end-user feedback until they match demand.
- They end up **capturing a sufficiently large share of customer's mind and wallet** (through a related set of services) to recoup the initial investment and to minimize the proportion of revenue that is devoted to marketing expenses once an ICT channel is built.
- They leverage this channel to the maximum with a **wide range of services, combining varied revenue streams**. ICT4D is a low price-high volume market, with unit price of each service in the order of magnitude of a few cents to a few dollars at best. The larger the offering of services, the easier the customer base expansion and cross-sales of complementary services becomes, thus speeding up cost recovery, and maximizing impact.

The first two characteristics describe an entrepreneurial debut, requiring time before "getting the business right" (one or two years of adjustment is the minimum) and often necessitating a corresponding high initial investment (in the order of magnitude of several million dollars) to finance these adjustments.

Notably because of the inherent conflict between these entrepreneurial characteristics (needed for initial proof of concept) and the systemic approach required to scale, a number of obstacles fall in the way of ICT4D project leaders interviewed for this study, be they managers within large corporations or social entrepreneurs.

- They need an **adequate policy framework** to develop, often requiring changes in existing regulations to allow the use of ICT in their development field, and sometimes depending on government support for success. In many cases the need for multiple approval processes (e.g. telecom regulation and healthcare regulation) for unusual offerings considerably slows down projects.

- The difficulty in this field is to combine a **very local understanding** of people's habits and demand with the **necessary technical expertise** and the **specific sector expertise** – this means a need either for partnerships or for growing the required internal capacity, both for the core team and field employees.

- They need **funding** at several levels:
  - equity investment (possibly under the form of patient capital) for the company,
  - loans for their local agents – often considered unbankable, and with loan amounts between those of MFIs and of traditional banks,
  - and donations or investments by third parties sharing their interest in developing the service, notably for awareness, marketing and the training of employees.

- **Technology** remains an issue, in the pilot phase to design an interface with great usability, and more importantly in the scale up phase when the back-end needs to be adapted to larger numbers. Social entrepreneurs seem to suffer more from a **lack of digital literacy and IT expertise**, because many are field practitioners (as opposed to managers of ICT4D projects within large companies).

- Finally, though this is not a challenge mentioned by the project leaders, our research points out that there is no "quick and dirty" way to test services locally: they all need several months, if not years, of field testing to be suited to local needs – which further lengthens what is usually an **extensive service design and technical trial period** before service is made available widely.

These issues are at the same time significant challenges and an exciting opportunity in the sense that – if addressed systematically and systemically – they could generate high social and economic returns. Market-based solutions in ICT4D are a high risk, high return game. In this perspective, ecosystems of ICT4D specific initiatives and stakeholders would favor the scale-up and replication of ICT-based businesses. Indeed, to scale up, an ICT4D project needs of course the "ICT" part (robust and locally appropriate technology with adequate network), the "D" part (locally relevant development content), but also an adequate political framework, supportive or at least permissive for innovative initiatives to develop. Such ecosystems not only require encompassing several

actors (from the public, private and citizen sectors), but can also benefit from encompassing several areas (notably those studied here – agriculture, finance, health, education), serving a wider share of their customers' needs and leveraging infrastructure to generate several revenue streams. This evidence would notably point to the establishment of regional clusters of ICT-enabled businesses in given geographies, providing a wide range of services, that could catalyze high economic and social impact in the medium and long term.

Going forward: Building ecosystems for rural development and other opportunities

Rural areas seem to have the most to gain from ICT4D. The key issue that their inhabitants face in terms of development is their lack of access to many services. Building a sustainable business case on health, finance, agriculture and education can be facilitated in a rural setting thanks to the immediate visible economic impact of such services – previously unavailable, and suddenly bringing a whole new set of possibilities to rural populations until then disconnected from the rest of the world. Though rural development is indeed one of the opportunities of ICT4D socially and economically speaking, it is too early at this stage to state where the most promising venue will be. The area with the largest potential will depend on:

▪ **The number of potential clients** (both individual and businesses) for a given type of service – most of the world population in health; children, students and adults requiring training in education; adults in financial services; and in agriculture most people in rural areas
▪ **The improvement it will represent compared to previous service offerings** and the added value brought in comparison, which will determine how much people could be willing to pay
▪ **The level of novelty of a service** – harder to promote if it is entirely new and does not replace an existing practice as it necessitates consumer's education. Success for such initiatives is likely to take more time than for those "simply" granting easier access to existing services

And finally, as all actors of one given sector need to collaborate to successfully create efficient ecosystems of ICT services, **their willingness to participate as a whole sector in these new types of "social businesses" will be key to enable a given sector to make the most of ICT**. Indeed, all have a role to play. Much relies on:

▪ **Governments** to encourage the use of ICT;
▪ **Aid agencies** to inform all stakeholders and support adequate models via research and financing lines;
▪ **Social entrepreneurs** to develop innovative, grassroots, locally appropriate businesses with strong partners;

▪ **Large corporations** to invest as heavily as is required to scale up existing models and have a true impact;
▪ **Financial institutions** to provide the various types of capital needed to get the models right;
▪ **Citizen Sector Organizations** to help recruit the adequate workforce and build awareness on the ground on the benefits that ICT can bring in many fields of development; and
▪ **Research institutions and academia** to help understand the case for health and education ICT business models and find how to better measure the impact of ICT (and compare its cost-efficiency to that of alternative means of development).

Because of the need for ecosystems that is specific to the ICT sector, our key recommendation is for actors to work together to co-create solutions where ICT is the best way to bring development, making sure to answer a proven demand rather than estimated needs, and being careful about promoting an ICT solution when cheaper, more efficient alternatives might exist. This report ends with recommendations at three levels: from promoting problem-driven approaches, to scaling existing enterprises by enhancing synergies, and finally to replicating successful models via a systemic approach. More specifically, making the most of ICT4D through market-based approaches would require to:

1) **Focus on problem-driven approaches for sustainable projects to emerge out of the myriad of existing trials**
   a. Start from the ground-up, first identifying local problems to then develop equally local solutions
   b. Create the necessary ICT capacity among practitioners
   c. As a large player, foster the emergence of small ICT4D ventures
   d. Help build the case of the impact of ICT on development
2) **Support existing entrepreneurs, promoting cross-sector synergies and removing current barriers to scale**
   a. Promote or take part in cross-sector collaboration
   b. Assist in awareness building, training and recruitment of clients, staff, and agents
   c. Simplify regulatory process
   d. Create a range of adequate financing tools
3) **Create a systemic environment for cross-border replication**
   a. Build a holistic platform for replication of successful social businesses
   b. As governments or international development agencies, work on setting up a regional platform (or take part in one if it already exists).

ASHOKA FULL ECONOMIC CITIZENSHIP

Conclusion

Most of the cases we have studied are early success stories, with much yet to be written. As mobile penetration continues to increase in many markets, and as handset functionalities expand, more people will be enabled to play their potential in the global economy. Indeed, the challenge is not only to materialize the tremendous benefits that can be generated by bringing the existing success stories to those remaining billions who could benefit from them. It is also to bring those who still cannot (mainly due to low literacy and low purchasing power) to a level where they could access ICT and the services it enables. This is of paramount importance to prevent the further deepening of the gap between an ICT-capable part of the world and the rest.

We are aware that many of the applications, services and business models that will take ICT4D innovations to the next level remain to be created in the coming years. Still, the ICT4D case studies seen here provide exciting insights that point to many opportunities for scale and replication. To build on the success of current initiatives, and to invent new, more impactful business models for sustainability, stakeholders will need to partner and focus on multiplying an impact that so far still leaves most of the world out of reach of healthcare, education, financial services or agro-services. We hope that this report, like ICT itself, will not be an end but part of the means to create more effective approaches to foster development.

3. Connectivity

Summary

Information and Communication Technologies (ICT) have proven to be appropriate tools for poverty reduction in developing countries. But the first prerequisite, before implementing ICT projects for development, is to build up connectivity. In emerging markets, the last 10 years were spent bringing and extending mobile connectivity as well as sea-cable, fiber and fixed infrastructure for broadband connectivity in general. Though services leveraging ICT for development (ICT4D) have existed for the past 10 years as well, it is only now when connectivity is truly becoming ever present, that ICT will have the opportunity to unleash its full potential for development through market-based approaches riding at low marginal costs on existing infrastructure.

3.1 Closing the connectivity gap

Developing countries have become the main drivers of growth of the telecommunication industry. Today there are more than 3.8 billion mobile phone subscriptions in emerging markets.[12] Access to mobile networks is available to 90% of the world population and 80% of the population living in rural areas.[13] The mobile phone has grown faster than any other technological platform and its penetration rate in developing countries reached 68% in 2010.[14] The Asia Pacific Region is leading the way while Africa is lagging behind with a 41% penetration rate. However the region of Africa is today the fastest growing mobile market with a compound annual growth rate of 27% between 2005 and 2010.

The rise of mobile phone subscribers and internet users in developing countries

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mobile subscribers	5.5	7.9	10.3	13.5	17.5	22.9	30	38.5	48.2	57.7	67.6
Internet users	2	2.8	4.3	5.5	6.6	7.8	9.4	12.3	15.3	18.5	21.1

■ Internet users ■ Mobile subscribers ■ Non subscribers
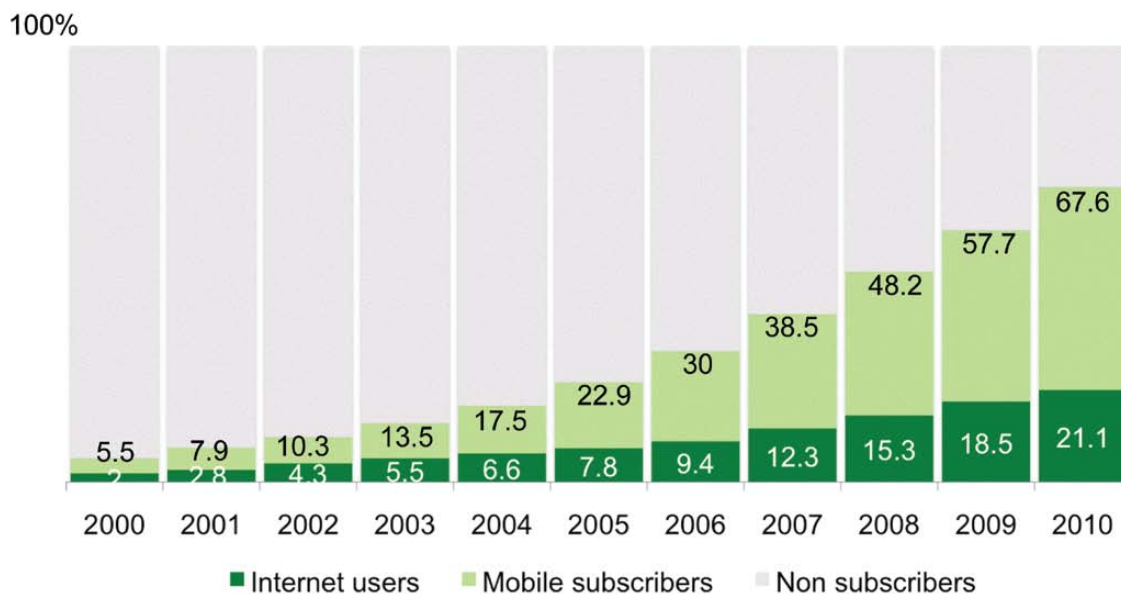
Source: IUT World Telecommunication /ICT Indicators database
Note: The developing country classification is based on the UN M49: http://www.itu.int/ITU-D/ict/definitions/regions/index.html

[12] *Measuring the Information Society – 2010, International Telecommunication Union (ITU), 2009*
[13] *The World in 2010: ICT Facts and Figures, ITU, 2010, www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf*
[14] *See footnote 12*

ASHOKA FULL ECONOMIC CITIZENSHIP

Five main steps are necessary for mobile connectivity:
- General telecommunication infrastructure to extend network coverage and to connect internationally (especially for growing data traffic)
- Last-mile antennas to effectively reach isolated communities
- Affordability of handsets and calling rates
- Availability of a distribution network for handsets and calling cards
- Reliable sources of energy for suppliers' infrastructure and end-users' handsets.

Today mainly last mile antennas remain a challenge, while the other steps are taken quickly worldwide. Telecommunication companies have made large investments in infrastructure and expanded their coverage areas.[15] Even in countries struck by extreme unrest such as Afghanistan, Roshan, the largest telecommunication company of the country, covers more than 60% of the territory only 8 years after it entered the market.[16]

While infrastructure has expanded network access, handsets have become more affordable: competition and technological progress resulted in a sharp decrease in handset prices. In developing countries, the price of a basic handset fell from around $250 in 1997 to $20 in 2009.[17] To reach the lowest income households, Nokia and Vodafone both sell entry-level models for $15.[18] Competition among manufacturers is increasing and some new players in India even offer smartphones for as low as $50. This dramatic decrease in the price of handsets has led to massive adoption by the BoP. Even in the poorest areas, people can generally afford a phone (or gain access to one through a wealthier family member) and share it, allowing access to telecommunication to their community without necessitating individual phone ownership.[19] Today there is even potential for the development of a vibrant second-hand market for smartphones - as collection and recycling/refurbishing is taking off in Europe and the US.[20]

Affordability also requires adequate pricing of calling rates. Telecommunication companies have developed innovative pricing strategies that fit perfectly BoP users' spending pattern. Most companies charge customers before use with prepaid cards (95% of mobile business in emerging markets is prepaid) as opposed to the model in use in Western countries where mobile plans are primarily billed post-use on a monthly basis. Furthermore firms offer prepaid cards at prices sometimes as low as the smallest currency in use in the country, allowing even the poorest to buy calling cards.[21] Prices are generally going down as competition heats up across the region and even roaming charges between countries (e.g. in East Africa) are being phased out by some carriers.

SIM and prepaid cards are also widely available in any local store or from street vendors. Ray Short, USAID Resident Project Director, argues that even in the Democratic Republic of Congo, one of the poorest countries of the world, "today everyone has a cell phone or a parent with a cell phone that they use; on every street, you can see little wooden tables set up by private citizens selling calls or scratch cards". The association of this low pricing strategy, coupled with a far-reaching distribution system, has paid off and enabled BoP users to access mobile communications services whenever they have available income, however small and irregular it may be.

> "Today everyone has a cell phone or a parent with a cell phone that they use."
>
> R. Short, USAID Resident Project Director (ICT for Development) in Congo

Access to energy – not access to a network – is the remaining key challenge for rural mobile connectivity. Telecommunication companies need low-cost energy sources to connect their infrastructure, and end-users need to charge their phone on an almost daily basis – all this in areas where almost 1.5 billion people do not have access to electricity. When they own cell phones, consumers often have to resort to using costly fuel generators or travelling to the next city to plug their phones. Still, the barrier of energy has not stopped BoP users from adopting the mobile phone. And today, sustainable energy solutions are emerging. Various organizations are currently working on providing low-cost rural infrastructure including energy solutions. Orange has developed Oryx, a solar powered base transceiver station that does not require connection to the grid. Ericsson has also developed solar base stations as well as energy efficient hybrid diesel-battery solutions. VNL, a company from India, developed a similar technology with a community business model that is profitable even in areas where the average revenue per user (ARPU) is under $2.[22] Similarly, at the end-user level, affordable solar battery chargers are becoming

---

[15] *Special report on telecoms in emerging markets, The Economist, 2009*
[16] *See notably www.akdn.org/afghanistan_economic_development.asp*
[17] *Special report on telecoms in emerging markets, The Economist, 2009*
[18] *The phone sold by Vodafone is manufactured by Chinese vendor TCL. See Innovative ways of appropriating mobile telephony in Africa, French Ministry of Foreign Affairs and ITU, 2010*
[19] *Innovative ways of appropriating mobile telephony in Africa, French Ministry of Foreign Affairs and ITU, 2010, Hystra research*
[20] *Source: Orange expertise and Hystra research. Companies such as YouRenew.com (www.yourenew.com) pay consumers for used electronics that they refurbish and resell.*
[21] *Conference at AFD "Socio-economic impact of mobile phones in low income countries: stocktaking and way forward", on May 26th, 2010*
[22] *See www.vnl.in*

increasingly common in remote areas.[23] At the European level, project EARTH, in which Ericsson takes part, aims at enhancing the energy efficiency of mobile systems by at least 50%.[24] As more people access energy in all its forms (grid or autonomous technology), charging a mobile phone will become cheaper and easier, thus resulting in lower cost for end-users and additional revenues from increased usage for telecommunication companies.

An illustration of this evolution of connectivity is the story of VillagePhone, one of the most praised connectivity project for development in the world. The program was launched in Bangladesh in 1997 by GrameenPhone at a time where mobile connectivity was very limited. VillagePhone offered loans to rural women to acquire a mobile phone and an antenna, giving them the opportunity to sell airtime in their villages while generating enough revenues to live. The shared-phone project quickly caught on and in 2006 they were more than 364,000 village phone operators reaching over 20 million users. But in fact, with connectivity barriers lifted one by one, VillagePhone Bangladesh lost ground as shared phone systems found competition from the individual mobile phone. Since 2006, VillagePhone's revenues have fallen by 90% and Village Phone Operators can no longer make a living only from renting mobile phones. In 2010, Mr. Kazi Islam, CEO of Grameenphone IT, said that now that more Bangladeshi could afford a phone, "the Village Phone initiative had run its course in Bangladesh".[25]

Still, similar shared phone approaches, coupled with a last-mile antenna, remain relevant in places where connectivity challenges have not been fully overcome, especially in low-density areas where the economic viability of infrastructure is harder to reach. In places like rural Africa where only 7% of households owned a mobile phone in 2007, the VillagePhone model remains relevant.[26] It is currently replicated in several countries with such a low-density environment, often in modified formats where phone operators couple this job with additional income generating activities.[27] Similarly, disparities remain in Latin America. Many large cities have penetration rates above 100%, with many users using multiple phones and SIM cards; in Brazil for example, the regions of Sao Paulo and Rio de Janeiro have reached 123% and 116% penetration respectively in Q1 2011 while the isolated pockets in the Amazonas report the lowest penetration rates in the country at 23%.[28] Last mile connectivity remains a challenge in such low-density areas.

The second remaining issue is internet connectivity. The level of internet penetration is far from that of mobile networks. Infrastructure is still quite costly (both for fixed and mobile network) and public-private partnerships will likely be necessary to finance and extend infrastructure in most countries. Furthermore, many potential BoP users simply do not have the levels of literacy required to take full advantage of the power of the net. It also remains expensive: in 2009, an entry-level fixed broadband connection cost on average $190 PPP[29] per month in developing countries compared to only $28 PPP in developed countries.[30] The result is that only 21% of the population in developing countries uses internet with Africa lagging behind, barely reaching 10% of the population.[31] However with the spread of mobile phones, the issue is becoming less one of "full internet" versus "no internet", and more one of how much net is delivered via a largely mobile platform. It is expected that as price decreases and demand rises, the next decade will see the boom of mobile internet connections in emerging markets, notably based on improved graphic interfaces on low-end devices, becoming increasingly the main internet tool in remote areas.[32]

Finally, the debate remains open regarding the costs/benefits that ICT brings to development. In spite of the decrease of mobile calling rates, the BoP spend a considerable share of their disposable income on mobile communications: close to 27% in Kenya, 23% in Ethiopia, 22% in Tanzania and more than 9% in Senegal.[33] In rural

---

[23] Manufacturers for solar lighting devices distributed in the developing world such as Sundaya, D.light, Suntransfer or Phocos are all providing affordable solar phone charging solutions. Mobile phone manufacturers such as Nokia, Samsung, and Motorola have also developed entry-level handsets that can charge from solar power.

[24] EARTH stands for Energy Aware Radio and neTwork tecHnologies, and is a project funded by the European Commission involving 15 partners from 10 European countries: For more information, see www.ict-earth.eu

[25] See post on August 20, 2010: http://www.gomonews.com/challenges-are-mobile-opportunities-gomo-newsinterviews- kazi-islam-of-grameenphone/

[26] Les impacts de la téléphone mobile sur le développement; un constat à nuancer ?, La revue de Proparco, November 2009. That 7% number has increased with the development of rural infrastructure and decreasing prices of devices and telecommunication services, but remains very low when compared to urban numbers.

[27] See box on VillagePhone replications at the end of this chapter

[28] Dual-SIMs Drive Latin America to 100% Penetration Rate As 30% Lack Mobile Phones, Ian Mansfield, March 2011. Available at www.cellular-news.com/story/48352.php

[29] The purchasing power parity (PPP) measures how much a currency can buy in terms of an international measure, since goods and services have different prices in some countries than in others. The implied PPP conversion rate in Nigeria was reported at 75.33 National currency per U.S. dollars in 2009, according to the IMF. The ratio obtained by dividing the PPP conversion factor by the market exchange rate tells how many dollars are needed to buy a dollar's worth of goods in the country compared to the USA. Its value was 0.51 in 2009 in Nigeria according to the IMF.

[30] The World in 2010: ICT Facts and Figures, ITU, 2010 Available at: www.itu.int/ITUD/ict/material/FactsFigures2010.pdf

[31] See footnote 30

[32] "Finishing the Job", Special Report on Telecoms in Emerging Markets, The Economist, September 2009

[33] Research ICT Africa, 2009

Uganda for example, "business opportunities have helped to increase some incomes to afford the mobile phone but most households have made sacrifices in their everyday lives in order to afford the communication costs".[34] With the substantial amount that low-income households are spending on telecommunications, various actors have wondered about whether the mobile phone is a real progress or just an additional cost that keeps some users from meeting their basic needs.[35] Another debate is that of whether ICT and connectivity widen or close the gap between the technology-capable of this world and the rest, a clear risk being that all benefits of ICT accrue to the first category. In this report we have looked for ICT projects that had an overall positive impact.

3.2 Leveraging ICT for development

In the coming decade, as technological barriers are addressed, the question of connectivity will increasingly move from access to the use of services, so that ICT becomes a development tool rather than a draw on the poor's already constrained budget. Mobile phones, for example, have been shown to contribute to growth in emerging markets. It is estimated that every 10 percentage-point increase in mobile phone penetration yields an extra 0.81 percentage-point of annual economic growth.[36]

Additionally, the poorest have more possibilities of gains from technological progress than households of developed countries. When mobile and internet technologies emerged in Western countries, it was additive to the fixed-phone technology, simply granting easier access to existing services. Conversely in emerging markets, it does not replace any older technology. As Nigel Scott, one of the authors of an ICT4D report for UNICEF in 2010 puts it: "it is truly transformative", both for simple communication purpose and for other applications. As will be seen in this report, connectivity can for instance bring access to banking to previously unbanked population, or access to healthcare for people who had never been in touch with a doctor before. For this reason, the focus of this report is not technology itself but the possibilities of using the ICT channel to improve the livelihood of the BoP.

The following sections (chapter 4 to 10) draw the lessons of the case studies and other projects screened, per business models ("Direct access", "Local agents", "Crowdsourcing and crowdfunding", and "Financial services") and per sector ("Agriculture", "Health", and "Education" – "Financial services" being considered as a business proposition of its own).

The report ends up with recommendations to each type of actor that can play a role in making the most out of leveraging ICT for development.

A Djamaa Phone shared phone business in Mali

---

[34] *Mobile Cell Phones and Poverty: Technology Spending Patterns and Poverty Level Change among Households in Uganda, International Development Research Centre, 2008*

[35] *Les impacts de la téléphone mobile sur le développement; un constat à nuancer ?,* <u>La revue de Proparco</u>, *November 2009*

[36] *Information and Communications for Development 2009: Extending Reach and Increasing Impact, Christine Zhen-Wei Qiang, World Bank, 2009. Available at: www.ffem.fr/jahia/webdav/site/proparco/shared/PORTAILS/Secteur_prive_developpement/PDF/SPD4_PDF/Christine-Zhen-Wei-Qiang-World-Bank-Mobile-Telephony-A-Transformational-Tool-for-Growth-and-Development.pdf*

HYSTRA
hybrid strategies consulting

EXAMPLES OF SHARED PHONE APPROACHES

Note: VPO is used as a generic term for local agents selling airtime through their phones

Village Phone: Bangladesh (1997)
- _Partners:_ Developed and funded by Grameen Bank
- _Reach:_ 364k village phone operators (VPOs) reaching over 20m customers in 2006 but the number of VPOs has decreased more than tenfold since
- _Entrepreneurs targeted:_ Rural population, mainly women
- _VPOs' sustainability:_ Initially a full business proposition for VPOs, revenues have drastically decreased since 2006 and the business is no longer sustainable on its own
- _Financing of VPOs:_ Phone acquired through loan

MTN Village Phone/Payphone: Uganda (2003), Rwanda (2006) and Cameroon (2008)
- _Partners:_ Developed and funded by Grameen Foundation
- _Reach:_ 5k VPOs in Uganda, 3k in Rwanda and 1.1k in Cameroon
- _Entrepreneurs targeted:_ Rural population
- _VPOs' sustainability:_ Additional revenue stream available with sale of SMS and prepaid phone cards
- _Financing of VPOs:_ Phone acquired through loan or cash

Ruma: Indonesia (2009)
- _Partners:_ For profit social enterprise developed by Grameen Foundation and MFIs
- _Reach:_ 5.5k VPOs serving more than 350k customers
- _Entrepreneurs targeted:_ Rural women (90% of VPOs)
- _VPOs' sustainability:_ VPOs cover their costs yet revenues from reselling airtime are not always sufficient on their own. RUMA will offer other services through the mobile phone to add revenues (telemedicine, information about trade)
- _Financing of VPOs:_ Phone acquired through loan or cash

Barafón: Mexico (2006)
- _Reach:_ 600 booths in 4 states
- _Entrepreneurs targeted:_ Small independently owned convenience stores
- _VPOs' sustainability:_ Bringing additional revenues to existing businesses, bundled with other services
- _Business model specificities:_ Placing booths in existing small businesses at a more affordable rate than current mobile phone rates and providing greater security and privacy than public phone booths

Pocket Public Calling Office project (PPCO): India (2008)

- *Partners:* Developed by Aditya Birla Group IDEA Cellular in collaboration with the IFC and the Self-Employed Women's Association (SEWA)
- *Reach:* 1.2k VPOs in pilot phase; no data for 2010
- *Entrepreneurs targeted:* Rural women
- *VPOs' sustainability:* Additional revenue stream available with sales of prepaid cards
- *Financing of VPOs:* Phone acquired through loan

Village Phone Zain: Madagascar (2007)

- *Partners:* Developed by MNO Zain and in collaboration with IFC
- *Reach:* 6.6k VPOs earning average $16/month handling more than 1m calls
- *Entrepreneurs targeted:* Business owners looking for additional revenue streams
- *VPOs' sustainability:* Bringing additional revenues to existing businesses, bundled with other services
- *Financing of VPOs:* Phone acquired through loan or cash (highly subsidized by the government)

Cambodia Village Phone Company: Cambodia (2007)

- *Partners:* In collaboration with UNDP and Nokia
- *Reach:* 6k VPOs
- *Entrepreneurs targeted:* Rural population
- *VPOs' sustainability:* Insufficient on its own, project underway to bundle services
- *Financing of VPOs:* Phone acquired through loan or cash

Djamaa Phone Orange: Mali (2010)

- *Partners:* Developed by MNO Orange
- *Reach:* 600 VPOs deployed in less than one year
- *Entrepreneurs targeted:* Individual or small businesses in rural areas located 25 to 70km from Base Transceiver Station (to receive and expand phone signal)
- *VPOs' sustainability:* VPO requested to set up Djamaa in villages of more than 500 habitants to reach sustainability more easily
- *Financing of VPOs:* Phone acquired through loan or cash

4. Value added information directly accessed by end users

Summary

Services directly accessed by end-users are usually delivered over a mobile platform; end-users interact directly with the device to access the service. Such services must be customized, i.e. culturally relevant and offering either localized or personalized information, to be adopted by the local population. They can then have significant positive socio-economic impact on the BoP, from saving lives with relevant health advice to significantly increasing agro-revenues with information on both prices and best practices.

Building such a tailored offer requires time (typically several years) and investment in the millions of dollars; registering enough customers to justify this high initial investment and keeping them active additionally require high on-going marketing expenses.

Players setting up such services must be aware that breakeven will take years and must carefully balance investment in fine-tuning their offer and marketing expenses, to register a sufficient number of clients. Additional challenges include retaining topical experts as staff in a teleservice operation which they may not find motivating or rewarding enough, and the need for dual approval by both ICT and sectorial legislators – yet financial rewards in case of success are significant as the marginal cost of service delivery to one more client is quasi-null.

One of the most striking changes in the development landscape over the past few years has been the ubiquity of handsets, which are now accessible to a very strong majority of the population nearly everywhere in the world, mobile penetration having crossed the 70% mark worldwide somewhere in 2010.[37] Africa, the least equipped continent, has over 40% mobile subscription in the population.

The handset has therefore become the preferred way to deliver information to isolated areas or people who would otherwise have limited ability to obtain direct access to expertise. That said, though there are some exceptions, the very poorest are typically not reached, as more pressing needs will often take precedence over information.

The "direct access" model: simple information accessible directly on cheapest ICT device - eg, mobile phones

---
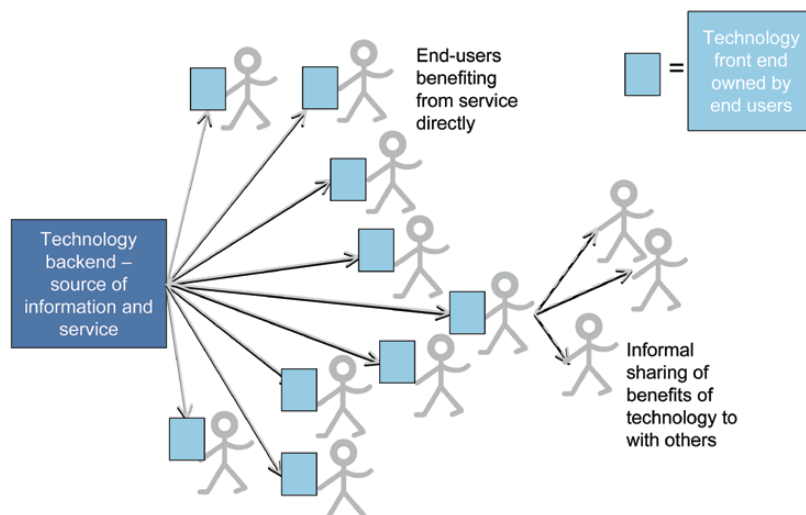
[37] See: www.itu.int/ITU-D/ict/statistics/material/excel/2010/Global_ICT_Dev_00-10.xls

ASHOKA FULL ECONOMIC CITIZENSHIP

The case studies using this model of "directly accessible information" can be found in education, health and agriculture; in any domain where delivery of information brings a value that is recognized by end-users. In education, BBC Janala is coordinating the delivery of English lessons across all media platforms and has reached over 3 million trainees via phone alone in Bangladesh in its second year after launch. In agriculture, Esoko provides real time local market information (price, inventory levels) to small farmers and SMEs in rural locations of Africa, as well as a bid/offer matching service in 15 countries through a franchise network, leveraging on existing trade platforms and a crew of enumerators who collect local market information in local format. Reuters Market Light (RML) in India provides weather and local market price information as well as agricultural news through SMS to several hundred thousand people. Finally in healthcare, HealthLine in Bangladesh, a strategic collaboration project by and between Grameen phone and TRCL (Telemedicine Reference Center Limited), provided health advice over the phone on drugs, on doctor referrals and medical facilities, reaching more than 3.5 million users between 2006 and 2010.[38] Another model, mPedigree, allows patient to confirm their medicine is legitimate and not counterfeit before they leave the pharmacy by sending an identification code through free SMS and getting an automated response in appropriate language.

> " The combination of simple technology with the right resources can have impact on peoples' lives in very tangible ways."
>
> Bright Simons, Founder and President of mPedigree

medical decisions. Suddenly mobile phones have made such information more accessible; and today service developers have found ways to make it value-adding and attractive enough for consumers to pay for it.

The low cost of delivering information is not a sufficient value proposition for information broadcasters to address the needs of end-users or for end-users to purchase it. Rather, adding value to information by making it responsive to needs, mutually enriching across channels and/or fine-tuned to recipient's characteristics (notably in terms of literacy levels and specific needs) is where real value lies. Thus, customization, in the form of **localization** (BBC Janala, Esoko, RML) or **individualized service** (HealthLine, mPedigree) is the common feature of all identified models that have reached or have an opportunity to reach breakeven: the right information at the right time in the right place.

In education, BBC Janala achieved a wide reach rapidly (several million clients purchasing English lessons in less than two years) thanks to a thorough **customization of content**. English lessons in Bangladesh have a clear value proposition as they open job opportunities, yet they needed to be made attractive enough for people living on less than 2 dollars a day to accept to pay for it. The program underwent extensive user testing to become culturally relevant, including setting up navigation commands in appropriate Bengali.

4.1 Business models deliver the right information at the right time in the right place

Lack of information takes a heavy toll on the poorest, in the form of forfeited margin for agro-products, forfeited contracts resulting from the inability to communicate in the business language or the inability to make the right

In agriculture, ICT provides the ability to access **local information** on market prices, the availability and cost of inputs, and weather forecasts, as well as access to locally relevant information on best practices. Information needs not only to be local, but also timely, to suit daily needs of information notably regarding weather and price. Esoko and RML provide these services in West Africa and India, respectively. Information is localized in that subscribers can choose for example what crops they

---

A story from the field from Mark Davies, CEO of Esoko, on gathering local data in Africa

Mark explains how this service is built on pulling data rather than pushing it: "I realized that it's not about pushing out data. Businesses thrive on their business data. Therefore, it's not about push but about pull. I realized the need for building a platform that could acquire that data. A good illustration is the case of that fish farmer from Ghana: a fish farmer needs to regularly feed his fish with yellow maize. Therefore, a constant supply is crucial. Due to the irregular supply of maize in Ghana, the farmer had to buy the product from Argentina. Regular information on the supply of local maize planters would allow the fish farmer to buy his product locally and realize significant savings. Esoko used a "scouting approach" to acquire this information, decreasing the procurement costs of the farmer".

---

[38] *Despite its profitability, due to disagreements on health care service delivery policy issues, the initial HealthLine services has been discontinued from TRCL to Grameen Phone subscribers from 25th April 2011 through a mutual business termination agreement between GP and TRCL. See case study p.49*

HYSTRA
hybrid strategies consulting

want information on, and which markets they would like to get prices on. Such information has proved to increase farmers' revenues, potentially enabling their move from subsistence to revenue generating farming.

In healthcare, the value-added customization of the service resides in that it provides access to **individual services** (potentially life-saving ones!). In the case of HealthLine, an individual phone consultation is offered at a fraction of the cost of a regular consultation to people who cannot financially or physically afford to see a doctor. In the case of mPedigree, users send an SMS with a unique identification code and get instant reply on the drug's genuineness, in countries where up to 40% of medicines are still fakes. The service is free to end-users and yet only around 10-20% of the tagged packs generate a verification SMS, proving that the service not only requires to be useful and customized, but also well-marketed, to recruit end-users.

These offerings are completed with user training and live expert advice (RML), multiple channel offering (BBC Janala), actual guidance on local situation (HealthLine), or management support (Esoko). Esoko in particular has recruited all members in the value chain in its polling process to provide not only information about stock levels and price evolutions, giving customers access to locally relevant price/availability information for inputs and outputs, but also the capability to act upon that information.

4.2 A sustained customer relationship is needed to cover necessary high initial investments

Localized, tailored information requires a high initial investment:
1) in product development and/or building partnerships and organizing data collection from the field to fine-tune the information provided;
2) in marketing to make the system attractive, trusted (especially in healthcare) and known.

Conversely, the cost of a service provided directly via phone will have a cost in the order of magnitude of that of a call or an SMS to be acceptable price-wise to customers – i.e. a few dollar cents per unit. Information systems

that are too narrowly targeting end-users for financing have found it difficult to secure sustainable revenues, as customer acquisition costs were not sufficiently offset by retention. The challenge is thus to create either a very large client base, or repeated use by existing clients.

Two main models have proved successful in extracting revenues either from the end-user, or from a third party with an interest in the system.

4.2.1 Subscription paid by end-user

A subscription model avoids the need for repeated conviction of users to use the service: the user pays in advance for an offer valid over a certain time period, encompassing several "units of service". For example RML sells various service packs from yearly down to quarterly subscriptions, to benefit daily from 5 tailored SMS. Customers subscribe through scratch cards that allow buying usage of the service for a limited period of time, and registration and customization are free to elicit first use. Such services, when they provide comprehensive, up to date information, naturally build up their client base: users will want to keep it and will reactivate their subscription for a long-enough time both to offset their initial marketing acquisition cost, and to advertize the service towards their neighbors via word of mouth without the need for further marketing by the service provider. Additionally, being a "member" of a subscription service can lead to improved status in the community, providing further incentives for new clients to register.

HealthLine started with a similar model but in order to increase penetration of the service, HealthLine moved away from subscription and into a pay-for-time model. Indeed the issue of subscription models is that they raise the cost of first use, from that of one SMS or minute of call (below $0.01 in India), to a full $7 in the case of RML for the cheapest quarterly pack. This amount already corresponds to an investment for the poorest, earning less than $2 a day.[39] Additionally, subscription models are very relevant for information that needs frequent updates (such as weather forecast of daily market prices); not necessarily in the case of healthcare where expert advice is likely less frequently needed (or at least less regularly).

---

[39] At the time of writing Esoko was still fine-tuning its price structure, after trying notably a subscription model with a fixed monthly fee plus premium per price request. See case study p.41

4.2.2 Fee-for-service (pay-for-time or pay-per-unit)

A fee-for-service model lowers the entry cost in the system for new customers, as they only have to pay for a unit of service in order to start using it.

Experience-type model: motivating repeated use through high quality first experience as part of a set of service units

Experience-type models (BBC Janala) propose a set of interactions that needs to be taken together to get full benefits from the experience, through repeated use over a period of time.

Such models can recoup their investment, provided adoption rate is high enough and sufficient new content and marketing maintain visibility and ensure repeated use. BBC Janala achieved both (with more than 3.8 million paying users and 51% repeat use) through heavy brand investment consisting notably in saturating all media channel for improved consumer brand recognition, use, and impact.

Reference model: becoming the reference on a key issue to avoid attrition

Reference models (HealthLine, mPedigree) provide a service that is a major solution to a problem that takes a significant share of mind for the customer, and where the service proposes to become the unique reference. When an alternative exists, it typically comes in an antiquated

form and at ten times the cost. In health, at $0.06 for a 3 min call, the HealthLine service can save days of work (several dollars of income) to patients, from unnecessary travels to a doctor, by referring them to the nearest clinics or indicating directly a relevant medicine to buy. In case where alternatives do not exist, such as verification of medicine's genuineness, creating willingness to pay may be more complex – or on the contrary eased if the new service answers an unfulfilled demand. mPedigree has not tested end-user's willingness to pay but rather opted to charge pharma companies for the tagging of their medicine boxes with identification codes. The unit charge covers notably the costs of bulk SMS purchased by mPedigree so that the verification service is provided for free to end-users.

Reference models must be completely reliable to maintain trust. In the case of mPedigree, the service is used at the point of purchase of drugs and medicines. Mobile network coverage must be sufficient and the response time of the service must be timely enough to be of use to the end user. Such services typically require a high investment in marketing upfront to make the service known, but are then meant to become an instinctive reaction whenever users are faced with the problem addressed. Having a solution that comes across as comprehensive helps in maintaining the reference: hence HealthLine's plans to launch specialized services for chronic ailments and to manage patient records.[40]

Customer life cycle / End-user experience in direct access business model

Discover >>	Join >>	Get started >>	Evolve >>	Evangelize
1) Provide intuitive, rich information relevant to customer and context 2) Sustain heavy advertising 3) Activate relays (distributors, officials, reference individuals)	Simplify end-user access: 1) Either no need for a subscription, or easy, free subscription 2) Short dial numbers	1) Avoid technical requirements 2) Produce highly portable, intuitive content 3) Build sufficient depth to be relevant	1) Progressively offer additional features to existing clients, building a deeper customer experience over time, for clients to feel like experts in the service 2) Continuously feed new content 3) Provoke customer interactions	1) Engage interaction and sharing between users 2) Ensure full coverage of needs in the chosen area

---

[40] *TRCL is a private company specialized in health information technology operating since 1999 in Bangladesh. Since TRCL dissociated from Grameen Phone on HealthLine services, it has started giving mobile health care services independent from any telecom operator, to general population using mobile connections from all operators in Bangladesh, including Grameen Phone. See case study p.49*

4.3 High initial investment, ongoing expenses to maintain customers' interest and retain expert staff, and regulations are barriers to scale and replication

4.3.1 Developing an appropriate service requires high initial investments with delayed payback

Despite the apparently easily reached economies of scale from business models that rely on widespread one-to-many information flow, a key challenge for direct access initiatives is the very high level of investment both in information packaging, in customization to different types of users or equipment and in marketing. BBC Janala invested heavily in user testing of its SMS, television, web-based, and newspaper lessons during its first two years of operations (including before commercial launch, requiring several million dollars of budget before the program generated its first dollar of revenue), in order to make the learning experience culturally relevant as well as technically feasible. Version 2.0, which provides consecutive learning experiences for its users, is still in the design and user-testing phase. The development of the program will remain funded by development agency DFID for the coming 6 years, after which it aims at becoming self-sustainable. RML and Esoko also spent more than a year designing their service to fit the demand of end-users. mPedigree's service is less complex in terms of information gathering but extremely sensitive to security issues, as it deals with fake medicine. It took mPedigree more than a year again to design an appropriate, secured back-end.

> "It requires a significant investment in research and development to design an effective service for specific cultures and language speakers – there is no cookie cutter solution."
>
> Sara Chamberlain, Head of Interactive of BBC Janala

All this process, including solution testing to make sure that adoption is high upon launch, requires a typical minimum two-year delay before revenues start to trickle in. The initial investment cost from this lengthy but necessary process is in the million of dollar range, with revenue from individual customers in the low tens of dollars in the best case, requiring scale to eventually be economically viable.

Therefore this high initial investment cost is made all the more difficult as it has a long payback horizon. In the interviews conducted for this study, nearly all project leaders working with this business model cited patient funding as a significant hurdle to getting started. Indeed in this model, a pilot approach started on a small amount of funds is likely not to be conclusive as it will not suffice fund-wise and time-wise to develop adequate service, and thus will not manage to prove customers' interest: initial investment needs to be large and patient to develop a service that will over time trigger customers' use and payment at scale. This is a high-risk, long-term, high-return business that few investors have been willing to tackle so far.

4.3.2 Maintaining awareness and customer interest in new services remains a significant operational expense

Even a clearly useful service that is free for the consumer, mPedigree, requires maintaining high levels of presence in customers' mind to generate more than 10% usage among medicine buyers. The fact that occurrences of transactions are infrequent (only in case of medicine purchase) adds to the difficulty of staying in the customer's mind. mPedigree advertises its service mostly under the form of flyers, billboards and general "promotion" type of information, expensive to provide over time. Esoko, faced with a similar issue to promote its service, relies on roadshows, local radio interviews and outreach through partner organizations, which requires a significant amount of resources.

Even once adoption is there, services must be both deepened to address more needs of the customer, and extended to reach more customers with the same service. That is what BBC Janala is doing by increasing access across dialects and refining content to introduce further progressivity in the lessons and better cultural adequacy. Similarly, after initial customer feedback, RML has added new local languages as well as new crop prices and international news to its service, widening its offer to better suit the needs of its users, extend its reach and get enough customers to justify both initial investment costs and on-going development expenses. Though this generates additional customers, it also creates new costs. The balance of investment in marketing and in on-going product development must be carefully weighed against gained customers' payments.

4.3.3 In expertise driven systems, training and turnover of experts limit capacity

Value added information requires context specificity, as a combination of local sourcing (Esoko, RML), specific know how (BBC Janala, HealthLine, mPedigree), and capacity to interact with customers (Esoko, RML, HealthLine). This draws on topic expertise and ICT expertise, both of which are often in short supply in emerging countries: technology specialists with local understanding, who could provide such services, are usually difficult to find. For example, HealthLine is struggling with health practitioner retention and training,

a major limiting factor in extending its call center service – it has placed its offices close to the medical schools to recruit young doctors more easily. RML has chosen to outsource the recruitment of its "market reporters" who gather prices in local markets to external agencies. They notably recruit among college students – at ease with technology and happy to earn a salary aside from school hours – managed by a more senior RML employee. Esoko acknowledges that evangelizing small business owners and farmers to build an information community requires adjusting behavior and takes time. This further lengthens the payback horizon for direct access service businesses. Expert retention and training clearly remains a key challenge with no universal solution for models studied here.

4.3.4 The dual aspect of ICT-enabled, development-oriented services complicates regulatory issues

Due to the transversal nature of ICT-based services, most projects depend on at least two administrations: telecommunication on the one hand and education, agriculture, finance or health on the other hand. In most countries (not exclusively in the developing world), the regulators in each service do not communicate, let alone coordinate. For projects that very often depend on a single leader with limited support capacity, obtaining the relevant approvals takes a significant toll on the organization.

Depending on local regulations and context, obtaining short codes across Mobile Network Operators (MNOs) can require lengthy negotiations and discussions either with regulators or MNOs themselves, as MNOs may not have particular incentives to support a service that does not enable them to differentiate from their own competitors. Alternatively, dependence on one MNO intrinsically limits the user population attainable by the service. The importance of MNOs and/or regulators' support for setting up rates, billing or regulatory approval has limited the autonomy and flexibility of these models in at least two of the five models seen here. For example, despite its profitability, the initial HealthLine service was terminated in April 2011 by GrameenPhone and TRCL mutually, for disagreements on policy issues regarding health care service delivery.

Challenging steps in the value chain of direct access model

Value chain	Challenges	Solutions
Content design and format	**Tune offering** • Build intuitive interaction • Coordinate across media • Guarantee portability	▪ Heavy technology and content initial investment ▪ Intensive user testing, long pilots ▪ Create low bandwidth content
Initial marketing	**Build awareness** **Elicit subscription**	▪ Advertising via multiple channels ▪ SMS subscription, local distributors, short dial
Service delivery	▪ Reduce cost of query and answer ▪ Staff hotlines ▪ Short dial	▪ Operator partnership ▪ Unsolved for technical requests (e.g. health) ▪ Operator or regulator support
Payment	▪ Subscription model: recruit customers ▪ Pay as you go model: promote use	▪ Voucher distribution or SMS subscription ▪ Payment in airtime, payment according to usage best for penetration
Customer relationship	▪ **Obtain reuse** by existing customers	
Feedback and update	▪ Segment users further ▪ Reach the poorest ▪ Follow preferences evolution	▪ Record voice conversation and systematically review complaints ▪ Test and monitor content take up ▪ Organize direct contacts

Information supply is eminently replicable. Whereas cultural adaptation and in some case recruiting and training of experts remain a hurdle, marginal costs of application porting and expansion go down. Esoko and mPedigree are expanding rapidly across Africa, RML covers a wide stretch of India, and BBC Janala and HealthLine have reached millions in Bangladesh, while all these initiatives are less than five years old. And yet two barriers that remain to truly reach the poorest are access to a connected mobile phone and literacy (where SMS is usually the preeminent form of communication). These are the two barriers that the business models of our next chapter address by providing value added services through local agents.

Case study list

Logo	Name	Sector(s)	Page
BBC জানালা	BBC Janala	Education	p.35
esoko	Esoko	Agriculture	p.41
grameenphone / TRCL Telemedicine Reference Center Ltd	HealthLine		p.49
Other examples of health call centers	Healthlink Government project in Bangladesh MedicallHome HMRI Teledoctor Fonemed Asia Pacific / Ask PLDT	Healthcare	p.56
Pedigree	mPedigree		p.57
Other examples of drug authentification services	Sproxil Pharmasecure	Healthcare	p.63
Reuters Market Light	RML	Agriculture	p.64

Providing interactive English language lessons to Bangladeshis in accessible format over multiple platforms – mobile, web, and television – at affordable rates

Executive Summary:

- **Organization:** BBC Janala is part of the English in Action project, delivered by the BBC World Service Trust (WST). The aim of the English in Action project, funded by the UK Department for International Development is to provide comprehensive English language learning opportunities to Bangladeshis across multiple economic and social strata via a partially-subsidized fee-for-service model.

- **Project:** Launched in November 2009, the service works across mass media platforms – TV, online, mobile, and newspaper – all run in tandem with new lessons each week, to provide comprehensive English language lessons to Bangladeshis. It has received over 10 million calls from 3.8 million people with over 170,000 mobile internet lesson downloads since launch, in addition to 20 million television and newspaper users.

- **Innovation:** Design of service underwent intensive user testing, branding, and has saturated mass media outlets so that these English lessons are accessible to majority of the population. The use of multiple ICT and other media platforms for stand-alone lessons designed with hundreds of hours of testing (input and feedback regarding Bengali language, accents, dialect, and culturally specific references), innovatively removes barriers to entry for low-income and low-education users. Leveraging and coordinating multiple platforms (mobile, web, newspaper, and television) has led to widespread use of the services and high market saturation in a short period of time.

- **Sustainability:** BBC Janala has proved BoP willingness to pay for English classes via mobile phones, reaching millions of clients at a cost of less than 4$ per person. Yet it does not currently collect any revenues of its own, all revenues accruing to mobile operators. The project will continue to be funded by the UK's Department for International Development until 2017 during which time the BBC WST will explore whether parts of the project – including mobile – can become independently commercially viable. Its reach in 15 months has been impressive; true scale and impact will require interest in the service to last once the novelty aspect of it has disappeared.

Project current status

- **Date of creation:** Started in 2008, commercial launch in November 2009

- **Service delivered:** Combination of mobile-, internet-, television-, and newspaper-based English-language lessons to Bangladeshis in fee-for-service model at subsidized price: $0.007 per minute for voice call-in lessons (0.5 BDT) and less for SMS (0.4 BDT)
  - TV drama: introducing functional English phrases
  - TV game show: teaching the phrases introduced in the drama in more details and encouraging people to go to mobile lessons and quizzes
  - Audio content of mobile and web: linked to newspaper content and writing activities

- **Customers:** Target of 60% of population, excluding socio-economic class E (the poorest, 40% of population). Geographic focus: nationwide, rural and urban. Main focus: people between 15 and 45 years old

- **Competitive landscape:** No other inexpensive option exists outside the classroom. Coaching centers' charging $14-84 (1k-6k BDT) for 6-8 week English courses

- **Partners involved:**
  - *MNCs:* Partnered with all six mobile operators in Bangladesh: Grameen Phone, Robi (owned by Axiata), TeleTalk, Warid Telecom International (bought by Airtel), CityCell, and Bangla Link
  - *CSOs:* BBC Janala was created by the BBC World Service Trust for the English in Action project in Bangladesh[41]
  - *Government:* Support from Bangladesh Telecommunications Regulatory Commission (BTRC) from beginning, notably for application for common short code, for reduced price of calls and SMS at launch and recent additional reduction in price. Working in conjunction with Bangladesh TV (State Broadcaster)
  - *Aid agencies:* UK Department for International Development: funding service as part of larger English in Action program

- **Technology aspects:**
  - *At end-user level:* Interactive program across television drama, game show, mobile, online, and newspaper
  - *At central level:* BBC Janala website designed with pages requiring 45k of bandwidth or less, making it accessible to users with narrow band internet
  - *Training needed:* Technology training at user level not required due to intense user testing and design of service from beginning and throughout lesson design
  - *Data security management:* Server located in UK due to robust BBC security policy. Exploring the transferring of server hosting to Bangladesh over next year to avoid issues with submarine cable link (Dhaka-based server would ensure users can always access online content)

---

[41] *English in Action is a partnership between the BBC World Service Trust, BMB Mott McDonald and the Open University to provide English language teaching to 25 million people in Bangladesh over 9 years*

- **Business design:**
  - *Staff capacity building:* Staff training focused primarily on project management, editorial policy for staff, and TV production skills
  - *Marketing:*
    - *Market research:* Research team measuring demand for English language courses, and price point (example of findings: men want to use service to find employment, women want better future for children)
    - *Advertising:* Major branding and advertising campaigns completed: within past 7 months, lower level of marketing, focusing on newspaper advertisement and Janala TV programs to promote service
    - *Branding:* UK design agency was hired to develop brand (included taking over 1k photographs in country to help design brand) through iterative rounds of user-testing with audiences in Bangladesh. Today BBC Janala recognized as brand by 24m people
    - *Customer feedback loop:* Qualitative and quantitative information on positioning of service from audience research sessions and user testing (test audiences in London in Bangladeshi communities, Dhaka, and rural Bangladesh)
    - *Education and awareness:* Research team and Interactive team working in the field to test service on an ongoing basis as additional products are designed. Marketing and Communications team carrying out below the line campaigns across the country – with vans of trained reps teaching people how to use the service through games, competitions, fairs and other outreach activities
  - *Distribution:* Produce about 300+ lessons per year (excluding TV programs). Television distribution through terrestrial/broadcast channel (access to television for 67% of population, i.e. 108m people). Distribution via internet possible due to translation of all internet navigation words into appropriate Bengali.[42] Use of multiple platforms for dissemination of BBC Janala services, driving users to each medium for the continuation of the English lessons and leading to continued engagement with users
  - *Pricing:* Access to mobile lessons at the standard peer-to-peer voice call rate (0.5 BDT), significantly cheaper than the majority of Value Added Services (all premium rate numbers – usually more than 5 BDT per minute). BBC Janala launched at $0.014 (1 BDT) per minute (3-minute lessons); in November 2010 price reduced to $0.007 (0.5 BDT) per minute for IVR (Interactive Voice Response) and from 0.5 to 0.4 BDT per SMS
  - *Cost and revenue split:* UK Department for International Development (DFID) funding given to BBC World Service Trust as part of BBC English in Action to create BBC Janala, supporting all costs for BBC Janala. Revenues from calls and SMS accruing entirely to mobile operators
  - *Payment:* Fee for service deducted from pre-pay mobile account (currently 99% of Bangladeshis pre-pay only). Plans to offer subscription-based charges for bulk minutes

- **Regulatory aspects:** Support from Bangladesh Telecommunication Regulatory Commission (BTRC) since inception, without specific directives: instrumental in BBC Janala's receiving of common short code across all carriers and reduced tariffs for mobile calls and SMS

- **Monitoring and impact measurement:** Research team devoted to impact measurement, ongoing (regular interviews with nationally representative cohort panel and formal testing of a panel of regular mobile users has clearly shown that BBC Janala has helped users improve their ability to speak English). Impact studies still being conducted (midline survey of 8k people in progress)

---

[42] *At the start of the project, 65% of people had not heard of internet, according to nation-wide media demographic survey conducted in 2008. Today, wireless internet access is growing rapidly: there is an estimated 6m people with internet access, up to 40% of them accessing it via mobile phones.*

HYSTRA
hybrid strategies consulting

- **Awards:** Tech Award – Microsoft Technology Laureate for technology in world education; World Summit Award – Mobile Content – m-Learning & Education Award 2010; GSMA Award – Underserved Segments

- **Future plans and next steps:**
  - *BBC Janala 2.0:* Currently in process of designing navigation, functionality and content of structured mobile course resulting in a certificate
  - Intending to be self-sufficient social enterprise (not profitable but breaking even) earning revenue and covering costs over next 6 years; plan to have management completely Bangladeshi in 12-15 months (with the exception of an expat ELT editor)

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** English is language of trade and business, but English language classes in schools is a low-quality, often negative experience. According to an internal study, 84% of respondents put learning English as a top priority for the future and 99% want their children to learn English

- **Solution provided:**
  - *Tool quality:* Intense user testing and feedback to design culturally sensitive and effective programming
  - *Comprehensiveness:* 300+ lessons produced per year
  - *Availability:* Widely available through all six major mobile operators and affordable; coordinated across different media channels: TV, newspaper, online, and mobile

- **Scale and reach:** in 15 months:
  - *Users:* Close to 6 million people reached through the various media used: more than 10m calls into service from at least 3.8m people; over 170k lessons downloaded via mobile internet of mobile internet site; 5m page impressions from 350k internet users on website
  - *Potential users:* Over 50m mobile phone users in Bangladesh
  - *Rate of return callers:* 51% of callers for mobile lessons return, compared with 5% mobile industry average in Bangladesh

- **Acceptance and usage:**
  - *Acceptability:* High levels of acceptability due to extensive user testing and design
  - *Usability:* Design of IVR prompts with user feedback resulting in easy to use system (majority of people have no concept of recorded message from phone). Low barrier to entry from stand-alone lessons: no need for user to have used another lesson before
  - *Branding:* BBC Janala brand recognized by 24m people

- **Socio-economic impact:**
  - *Social outcomes:* Anecdotal evidence of increased user ability to speak English, providing greater economic opportunities and consideration as better educated
  - *Economic impact:* Increased economic opportunities due to English knowledge

- **Environmental impact:** No explicit goals or initiatives. Service leveraging existing infrastructure and mobile phones in country, not creating additional waste

- **Other impact:** Self-confidence: Men believe that English language will help in gaining employment and women believe their children should speak English for better opportunities

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Initial cost:* Access to mobile phone, internet, TV
  - *Service cost:* $0.02 (1.5 BDT) for 3-minute lessons, or cost of access to internet in café, and data tariff for mobile lesson downloads
  - *Income level of users:* Target: income of $140 (10k BDT)/month/household plus 5 years + education. Not targeting 40% of population making less than 5k BDT/ month with less than 5 years of education
  - *Ability to reach the poorest:* Majority of users are BoP. Not targeting the poorest as personal funds are better spent on more pressing needs. Not targeting Bengali illiterate

- **At third party level (mobile operators):** Revenues from calls accruing entirely to mobile operators

- **At project level:**
  - *Total number of people employed at central level:* 13 people employed across all platforms, excluding television; majority of staff focus on content creation and production
  - *2010 revenues and profit:* None. So far entirely funded through grants
  - *Cost efficiency:* By end of year 3 (March 2011), reach of 6m learners at cost of below $4 per person across all platforms
  - *Initial funding:* DFID, committed to funding BBC Janala until 2017

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Investment in future content production – to continue to produce additional English courses going forward
  - Investment in advertising, which is crucial to the ongoing success of the project
  - Self-sufficiency of social enterprise
  - Continued reduction in cost to access mobile lessons
  - Launch of BBC Janala 2.0 with progressive lessons to continue to create demand for service

- **Additional requirements/ pre-requisites for the project to replicate:**
  - R&D funding to develop system and content prototypes and for testing of prototypes
  - Supportive government and regulatory agencies
  - Cost for service at appropriate price point for users
  - Strong branding campaign and training of local users
  - Funding of intense user testing of content, language use, cultural applicability, and design of cross-platform lessons to ensure similar success of program and rapid adoption
  - Design of service to reach users across multiple language dialects

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF THE BBC JANALA MOBILE AND INTERACTIVE TEAM

Sara Chamberlain is American-born but was raised in India. When BBC World Service Trust asked Sara to research the mobile and television industries in Bangladesh to inform the design of and English language teaching project, she jumped at the chance.

Sara met Ashraf Uzzaman during her research and conversations with industry and asked him to join her team once funding for Janala came through. Uzzaman worked previously for GrameenPhone and had successfully built a number of mobile services.

Together they designed and implemented the BBC Janala mobile and interactive program.

Exchange rate for this case study: 1USD= 70 BDT

INTERVIEW WITH SARA CHAMBERLAIN, HEAD OF INTERACTIVE, BBC JANALA

- "What was your aha moment?
  When we received more than 85,000 calls in one day – the week after BBC Janala launched.
- What are the 3 key challenges you have faced?
  1) Developing accessible, culturally relevant, bi-lingual content at the right level;
  2) Getting the IVR menus, navigation and voice prompts right;
  3) Negotiating common shortcodes and tariffs across all six mobile operators.
- Why has your model not taken up the world yet?
  It requires a significant investment in research and development to design an effective service for specific cultures and language speakers – there is no cookie cutter solution. Time scales dictated by research and development phase means that our schedules are much longer than those in the value-added service industry in Asia.
- What is the main policy or institutional change that would help your project grow?
  The mobile industry needs to recognize that delivering critical services such as education and healthcare requires a long term investment.
- What is the main internal capacity or resource that would help your project grow?
  Investment in research and development.
- What is the top one wish you would have that would help your project grow?
  Partners that recognize the value of social enterprise and are willing to recoup their investment over a longer term."

Sources:

Phone interview with Sara Chamberlain, Head of Interactive, BBC Janala, on February 14, 2011

Email exchanges with Damian Wilson, BBC WST spokesman, February to May 2011

"BBC's education service Janala has delivered 1m lessons in three months", The Guardian, February 17, 2010, Available at: www.guardian.co.uk/media/pda/2010/feb/17/bbc-bangladesh-janala-lessons

BBC Janala Branding, Un-titled Branding Portfolio, Available at: www.untitled. co.uk/bbcjanala/index.php

BBC Janala Case Study, Figaro Digital, Available at: www.figarodigital.co.uk/CaseStudy.aspx?pkCaseStudyID=afeadcdb-c210-4e9e-824d-57a5ba535047

BBC Janala project overview, BBC World Service Trust, Available at: www.bbc.co.uk/worldservice/trust/whatwedo/where/asia/bangladesh/2010/01/100115_bangaldesh_janala_project_overview.shtml

"BBC Janala receives Tech Award for educational innovation", BBC World Service Trust, Available at: www.bbc.co.uk/worldservice/trust/whatwedo/where/asia/bangladesh/2010/11/101020_tech_award_for_bbc_janala.shtml

Transforming Lives Through Media – Annual Review 2009/2010, BBC World Service Trust, Available at: downloads.bbc.co.uk/worldservice/trust/pdf/bbc_ws_trust_annual_review_0910.pdf

Contact person for the project:
Charlotte Imbert, Bangladesh Country Director for the BBC World Service Trust – charlotte.imbert@bbcwstbd.org

ASHOKA FULL ECONOMIC CITIZENSHIP

Improving small African farmers bargaining power by bringing them relevant market data on their mobile phone

Executive Summary:

- **Organization:** Busylab is a Ghanaian private technology firm set up in 2005. Its original goal was to attract local software engineers and to create local solutions for local problems. One project was TradeNet, a mobile-enabled web trade platform for agri products, started in 2006 with the encouragement of the FAO and with FoodNet in Uganda as the first client (market research of value added agro-products). In 2009, Tradenet was renamed Esoko.

- **Project:** Esoko has been in R&D mode between the years of 2008 and 2010. It developed into an innovative and complex mobile platform for farmers and agro-traders, businesses, coops and associations, NGOs and projects, governments and research organizations. The technology enables these groups to push and pull real-time market information in a user-friendly and affordable way. Among other things, the technology allows small farmers to know the current wholesale and retail commodities prices, thus able to negotiate better prices and improve the timing of getting their crops to market. Since 2008, Esoko has been developing its offer with partner-clients, mostly public projects, collecting prices on over 60 commodities in 500 markets across 15 African countries along the way. Esoko has recently created a franchise model. In this model, the franchisee is a stand-alone organization providing resources to deploy the Esoko offer in a given country, while Esoko in Accra provides overall marketing and IT support. Franchisees pay a fee and a share of their revenues. Ghana, Nigeria and Mozambique franchises were launched in 2011.

- **Innovation:** Esoko is the first organization to offer parties across the African agricultural value chain the ability to push or pull sector-specific data in a simple way via mobile phones or computers. Most existing projects offer only one specific service. Esoko has been innovative in creating an attractive, user-friendly application, and by doing so in a totally local, market-driven manner. Customer-needs research and product design have been the focus of Esoko from inception. Led by Mark Davies, a successful and seasoned web-entrepreneur, and well funded from inception, Esoko has been unique in its capacity to establish the kind of local software design team -over 20 full time local software engineers- needed to successfully deliver a product sustainably matching African users' evolving expectations. Esoko also contributes to the development of the local ICT industry by employing and training local IT undergrads and graduates and showcasing a viable African technology firm that could potentially expand beyond the African continent's markets.

- **Sustainability:** Though mainly focusing on pilot projects up until 2010, Esoko has already been working with well-regarded partners and profiled 26,000 individuals in 15 African countries through various public partner deployments. With a team of 60 at the Accra head office and 100 market scouts in Ghana and Nigeria, Esoko is now scaling up by means of its new franchise model. The $2.5 m equity brought by the IFC and the Soros Economic Development Fund (SEDF) provides a strong financial basis to deliver on Esoko's growth ambitions—to establish Esoko franchises across Africa, in the end creating the first profitable market information system (MIS). However, sustainability of Esoko's new business model has yet to be proven.

Project current status

▪ **Date of creation:** 2008

▪ **Product / service delivered:**
- Software platform that facilitates the flow of market information between farmers, traders, experts, agri-Businesses, coops and associations, NGOs, governments and research entities involved in agriculture and rural development. Managed over the web, and delivered via mobile phones
- Specific services:
  - SMS price alerts: specific price notifications can be sent regularly to individuals or groups via SMS. Each message is customized to their markets/commodities
  - Commodities indices: two indices, made-up of the wholesale and retail prices, providing analysis on price information for 12 commodities in 7 markets in Ghana
  - Instant upload: real-time market data can be uploaded from any phone, via Web, or through a specific Esoko phone application
  - Inventory reporting: stock tracking in a simple format from any rural location or warehouse
  - SMS bids and offers: any trade offer or demand received by Esoko can be matched and immediately notified via SMS
  - SMSing: commercial offers, extension advices, compliance notifications or event/training reminders can be pushed to reach out to target groups
  - SMS polls: Esoko's "Scout polls" allow to "fieldsource" key data such as crop activities, compliance to recommendations, inventories or yields
  - SME websites: easy to set-up profile websites on Esoko help give SME visibility to promote their goods to regional or international audiences
  - Maps: integration with Google Maps allows to visualize differential on pricing, offers from users, stock levels and respondents in polls

▪ **Benefit to end-users:**
- *Farmers:* Receive current demands, prices of crops, and the location of seeds and fertilizers on their mobile phones, improving their negotiation power and revenues. A more transparent marketplace enables farmers to negotiate fair prices for inputs and crops, improve their timing on getting goods to market, and move between markets to sell products
- *Collective professional organizations:* Improve members bargaining power, field source, improved communication with members
- *Traders:* Track stocks and procure goods
- *Agri-businesses:* Track how products are used and market themselves to new customers
- *Experts:* Execute polls, collect market data, track practices and early signals
- *Associations and Governments:* Share critical information with thousands using simple bulk-text messaging

▪ **Current customers and operations:** 26k individuals profiled and several large-sized partners in 15 different countries; Burkina Faso, Burundi, Cameroon, Cote d'Ivoire, Ghana, Kenya, Madagascar, Malawi, Mali, Mozambique, Nigeria, Rwanda, Sudan, Tanzania, Uganda, Zambia

▪ **Examples of "partners"** (clients) contracting with Esoko to collect, manage and compare price and inventory data, send SMS in bulk, and support Monitoring and Evaluation (M&E) operations in the field: 1) IFDC's project: Regional Agricultural Input Market Information and Transparency System operating in 8 Eastern and Southern African countries. 2) Market Linkages Initiative, funded by USAID, in Malawi. 3) Food Security Information for Action (SIFSIA) project implemented by FAO through the Ministry of Agriculture

in Northern Sudan. 4) Rural Income Promotion Program (PPRR) in Madagascar funded by IFAD. 5) the Nigerian Agricultural Market Information System (NAMIS). 6) Agri-business and Trade Promotion (ATP) project in Burkina Faso, Cote d'Ivoire, Ghana and Mali

- **Competitive landscape:**
  - *Substitution before project:* Mobile phones mainly used for voice, not for data. Typically, farmers would need to call or travel to the next market place to collect data. In reality, they would actually be mostly data-blind when trading
  - *Competition:* Few professional services available. Manobi (Senegal, market info for farmers), Reuters Market Light (India),[43] FrontlineSMS (no agri specialization)

- **Partners involved:**
  - *Investors:* IFC and SEDF
  - *International development agencies:* USAID (Agriculture and Trade Promotion project), FAO and Technoserve (clients of Esoko)
  - *Mobile operators:* support the SMS alerts systems (e.g. MTN in Ghana)

- **Technology aspects:**
  - *Technology used and installation required:*
    - *At central level:* Esoko proprietary technology, SMS connects mobile handsets with the online Esoko platform
    - *At end-user level:* Esoko system runs on sets of SMS codes that are configured in each country. Allows most services on basic phones. Java/Smart phones can be used for more advanced options, e.g. stock management or for easier navigation through menu-driven basic options. No other specific hardware/ software system required
  - *Training needed: Individuals:* road shows to 20 markets in Ghana (in 2011). Education by flyers on how to use the service. *Organizations:* Extensive training once a month organized on how to collect data (paid service). Partner projects run field trainings for farmers and farm leaders
  - *Data security management:* Public data is not protected. Private data supplied under a specific proprietary protocol that checks the recipient customer group. Country franchises responsible for hiring, training and management of enumerators (market data collection officers). Quality assurance process based on regular audits and "mystery" checks on enumerators reports
  - *Maintenance:* Servers hosted by 3rd party. Website maintained by Esoko, with in-house quality control team in charge of maintenance

- **Business design:**
  - *Staff recruitment process and capacity building:* In 2008, 9 employees. In 2010, Esoko Networks with 40 employees (25 tech development / 15 international support); Esoko Ghana Franchise with 8 HQ people, 30 enumerators; Nigeria Franchise: 9 HQ staff in Lagos, 40 enumerators. *Franchisees recruitment:* 1. Esoko identifies willing individuals among current projects' partners. 2. Search for potential franchisees coordinated by Esoko's Business Development head: seasoned business individuals with private sector background, IT knowledge and agri experience considered a plus
  - *Marketing campaigns*
    - *Country specific:* Comprehensive institutional marketing campaigns aimed at building national brand recognition and trust among individual target customers (e.g. Ghana: billboards, national newspapers ads, local markets roadshows with radio spots in local language). Showcase impact on farmers' revenue (anecdotal only so far).
    - *International:* International partnerships development (Telco, UN network); showcasing model in technology/ agri/BoP conferences; success stories development with solid partnerhips (e.g. with Northern Sudan Ministry of Agriculture); social media and website; successful customer relationship management.

- *Distribution:* Four channels: 1) Online at Esoko website, contact form to fill in for Esoko to contact customer. 2) Easy SMS subscription via 'text 1900' campaign where customers can request prices by texting their crop type 3) Esoko roadshows displaying specific codes for crops, 4) Partners' programs
- *Pricing:* Service offered for free for the first months, then premium for each subscription, paid through mobile operator to Esoko. Esoko is currently working on the right price structure, based on willingness and ability to pay for a service
- *Cost and revenue split:* Main revenue for franchisee will be the clients subscriptions, main cost are enumerators, head office (management, marketing and sales, IT support) and redevance to Esoko Network. Esoko Network collects fees from the franchisees and supports the main IT development costs. Franchise partners have minimum performance requirements (e.g. marketing, data collection, accuracy, training, profiling). They share revenues with franchisor

- **Regulatory aspects:** No specific requirements. Privacy does not seem to be an issue

- **Monitoring and impact measurement:**
  - Technology requirements and usability consistently tested with end-users (e.g. move from market/ commodity codes to spelling out markets/commodity names for less confusion)
  - M&E programs are measuring impact on end-users. Expensive methodology due to number of parameters to be monitored against baseline (e.g. impact on revenue generation for the farmer). Esoko considers this an investment in the future development of the brand and franchises

- **Awards:** World Summit Award 2009

- **Future plans and next steps:** Focus on the franchise model
  - Scaling up of franchises in Ghana, Nigeria and Mozambique
  - Replication of franchise model in other countries
  - Partnership development with mobile operators
  - Traceability for 2012: key area required by projects (needed for agri export to EU and increasingly required locally)

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** Agriculture described as the engine for growth in Africa, while lack of market transparency is an important barrier for small farmers' economic empowerment

- **Solution provided:**
  - *Service:* Affordable and timely access to market information that can help them negotiate better prices and improve the timing of getting their crops to market
  - *Tool:* SMS broadcast not dependent on mobile operators nor handsets models

- **Scale and reach** (current, pre-franchise development):
  - Average of 60k messages per month
  - 26k people profiled in the system (name, mobile, commodities, markets)
  - 3 franchises (Ghana, Nigeria, Mozambique)

- *Potential reach in Ghana:* 60% overall penetration of mobile phones in Ghana, 40-50% penetration for farmers[44]

▪ **Acceptance and usage:**
- *Acceptability:* Use of SMS, widely known and accepted
- *Usability: Professional use:* Web-based platform easy to use and designed with partners. *Individual user:* Simple display, farmers can easily get instant information when required. Content specifically adapted to measurements utilized by the end-user (e.g. bags, kg, cups, etc.). Literacy issue

▪ **Socio-economic impact for farmers:**
- *Economic:* Improved price realization for farmers and reduced risk (anecdotal evidence of revenue increase of +40%)
- *Social:* Empowerment of farmers/growers in negotiation process

▪ **Impact on IT sector:** Esoko contributes to the development of a local IT Industry, by employing and training local engineers and by showcasing a viable African technology firm

▪ **Other impact:** For all participants, scout polling product enables large-scale "field-sourcing" and reduces cost of surveying thousands of participants

2/ ECONOMICALLY SUSTAINABLE?

▪ **At BoP end-user level:**
- *Initial cost:* Need for a mobile phone
- *Income levels of users:* Average per capita Ghanaian income: $700/year (IFAD estimates)
- *Ability to reach the poorest:* Esoko service price represents a significant share of the average 10-20% of revenue spent on telecom in Ghana. However early evidence shows small-holder farmers increasing revenues so significantly that they may also be willing to pay.[45] Return on investment (ROI) has to be clearly demonstrated for farmers, hence the strategic importance of M&E and impact measurement

▪ **At local franchise level:**
- *Initial costs:* Order of magnitude of $1m to implement the system in a new country
- *Cost recovery:* Franchise profitable with 6k individual subscriptions and 1k-2k businesses (ranging from small trade groups to MNCs)[46]

▪ **At project level:**
- *Initial funding:* In 2007, Mark Davies, founder, as main investor. Angel investors since
- *On-going funding:* In 2010, $2.5m of equity investment from IFC and SEDF
- ROI to be demonstrated with the deployment of the franchise model

[44] *According to Esoko*
[45] *According to Esoko*
[46] *According to Esoko*

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Telco network availability for sending and receiving text messages
  - Willingness and ability to pay for service (farmers and organizations) – Esoko is still working on determining optimum pricing in its countries of operations
  - Field capacity: existence of sufficient enumerators, marketing and sales team. Esoko sees in field teams the major growth driver going forward
  - Funds to finance expensive nationwide institutional campaigns whose objective is to build brand recognition and trust within the agro community
  - Need for credible success stories and eco /social impact measurement
  - Existence of structured agro organizations in need of market data (e.g., cooperatives, sectors organization's, governmental organizations)

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Significant mobile phone penetration and network connectivity in rural areas
  - Infrastructure: e.g., 2G, GPRS, 3G, narrow and broad band Internet, power
  - Sufficient literacy in rural area
  - Number of potential subscribers (critical mass to justify enumerators field force)
  - Social acceptance of an online market data service
  - Willingness and ability to pay for service
  - Ability to attract new entrepreneurs / franchisees for replication
  - Capacity to develop a well studied product with features that people want:
    - Presence of skilled local technicians and engineers
    - Existence of a team focused on market needs understanding and articulation of product features accordingly
  - Public sector interest (potential leading role)
  - Existence of independent statistical research and of its corresponding institutional "clientele"
  - Subsidies or other initial funding mechanisms

THE PEOPLE

STORY OF THE ENTREPRENEUR
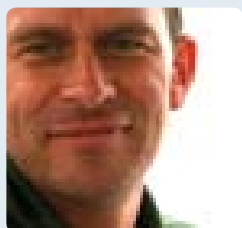
Mark Davies is a seasoned serial web entrepreneur and the CEO of Esoko. Born in Wales of a South African mother, he developed his technology carrier in the US.

In 1993 Mark set up Sky Electronic Publishing, a firm dedicated to designing & publishing direct mail catalogs. In 1995 he launched Metrobeat, an award-winning online local guide that merged with California's CitySearch a year later. Metrobeat and CitySearch jointly set cityguides in 70 cities over 4 countries, then merged with Ticketmaster Online and were taken public. In 1998, Mark co-founded First Tuesday, an internet social networking phenomenon that spread to 120 cities in 5 continents. From the sale of Metrobeat and First Tuesday he established BusyInternet, a private technology center in Accra, Ghana designed to incubate SMEs in technology.

For a long time he had had a drive towards Africa and felt that technology, namely the Internet, could become a major lever to help the continent unleash its potential. He had been impressed by Ghanaian business and technology skills.

Mark perceives working at Esoko as exciting and challenging. These words reflect the intent of Esoko to address farmers' economic issues by designing truly innovative technology services based on a deep understanding of their needs.

Mark is not driven by money: "if you're driven by money you're handicapped as an entrepreneur". Instead, he believes it is important to focus on the needs of the user: "if you're in tune with needs, with what they value, you'll make money".

He believes that the transparency Esoko brings to the agro-trade can foster a new vision of Fair-Trade: one of Esoko partners, a UK chocolate manufacturer, claims on its product packages that its cocoa is traded fairly as its value chain actors are "empowered" by Esoko services.

Mark also believes that Esoko's mission is to drive the development of a true African IT sector: "we hope to export this African technology all around the world", he says.

INTERVIEW WITH MARK DAVIES, CEO OF ESOKO

- "What was your aha moment?

The people in the business of charity told me 'don't make it a charity'. It was about being focused on the consumer -'how the hell am I going to get somebody to pay for this?'… I had to be 200% focused on these people listening to what they want, changing, developing and enhancing a product that actually met their needs.

I realized that farmers and rural businesses simply needed 'prices'. I went to see a model program on the ground and was inspired by what they were trying to accomplish, and horrified by the way they were doing it. They had one spreadsheet for Word, another one for email, a third one for Internet… I said 'we could build and sell a software and make it much better, much cheaper… every government is going to want to push this out'. That's why we got into agriculture.

I realized along the way that all the agri value chain stakeholders had the same need: to distribute and collect information, a particularly challenging thing to do in these informal markets. We backtracked from a product designed for one government to push out, to a platform that would allow any kind of organization to define its own group (public or private), and its own kind of content that it is pushing or pulling. We haven't succeeded yet, but that is what Esoko is trying to do.

- What are the 3 key challenges you have faced?

Product development: It was difficult to set the software team Esoko now has.

Usability: The challenge was to find the maturity and insight to put together a product with outstanding usability.

Impact measurement: These are the hardest communities you could choose to study impact with; they don't gather anywhere… if you want to ask a 100 farmers 'what's the impact', where are you going to go and ask them?

- Why has your model not taken up the world yet?

Success of MIS systems is in execution. We're still figuring out how to do that. We need to do a lot more with the product, e.g., learning about how to position and articulate it properly, convincing people to do something different by using it.

- What is the main policy or institutional change that would help your project grow?

Commitment of ministries to outsource part of their agri services to the private sector. If public sector understood the benefit of pushing market data out to farmers, they'd become more aggressive in writing policy.

HYSTRA
hybrid strategies consulting

Esoko advertising

▪ What is the main internal capacity or resource that would help your project grow?
Software and design expertise.
▪ What is the top one wish you would have that would help your project grow?
Speed."

Sources:

Interviews with Mark Davis, CEO, in February 2011

Interviews with Sarah Barlett, Director, in March, 2011

Interviews with Laura Drewett, Partner Director, in February and March 2011

Visit to Esoko head office on February 2011

Measuring Impact in Ghana, March 2010, Sarah Bartlett, available at:
http://www.google.nl/#hl=nl&source=hp&biw=1532&bih=686&q=Measuring+Impact+in+Ghana+esoko&aq=f&aqi=&aql=&oq=&fp=f778aed9b35bcf01

Designing Scalable and Sustainable Market Information Services for Grain Markets in Malawi, June 2010, Judy Payne et al, available at:
www.google.nl/#hl=nl&biw=1517&bih=686&q=Designing+Scalable+and+Sustainable+Market+Information+Services+for+Grain+Markets+in+Mal awi&aq=f&aqi=&aql=&oq=&fp=f778aed9b35bcf01

Mapping & Preliminary Evaluation of ICT Applications Supporting Agricultural Development, P S Krishna Kumar, August, 2010, available at:
http://www.google.nl/#hl=nl&biw=1517&bih=686&q=Mapping+%26+Preliminary+Evaluation+of+ICT+Applications+Supporting+Agricultural+Deve lopment&aq=f&aqi=&aql=&oq=&fp=f778aed9b35bcf01

A few questions to Mark Davies – TradeNet CEO, December 2007, Available at:
www.intracen.org/trade-at-hand/interview_Mark-Davies.htm

Esoko Networks: facilitating agriculture through technology, December, 2010, Olayinka David West, Available at:
www.africa-platform.org/sites/default/files/resources/Ghana_esoko_networks_summary.pdf

Precision farming How technology informs farm management decisions, and provides market linkages to African smallscale farmers, Tarrant H., Elliott L. E., Mary, 2010, Available at: http://www.afribiz.net/content/precision-farming-in-africa

From Pilot to Franchise: Esoko Arms Farmers with Information, Mulupi D., December, 2010, Available at:
www.audiencescapes.org/resources/field-blog/pilot-franchise-esoko-arms-farmers-information/pilot-franchise-esoko-arms-farme

Contact person for the project:
Sarah Bartlett, Esoko, Director, sarah@busylab.com

GrameenPhone (GP) & Telemedicine Reference Center Limited (TRCL) HealthLine

Bringing medical services on the phone to Bangladesh

Executive Summary:

- **Organization:** HealthLine was started as a strategic collaboration between GrameenPhone (GP) and Telemedicine Reference Center Limited (TRCL). GP, established in 1997, is a leading private cellular operator with over 23.8m customers out of a total of 54m in Bangladesh (Feb 2010). TRCL is a private company specialized in health information technology, using integrated contact center and cloud computing to deliver healthcare services through Internet, mobile phones and wireless technologies since 1999.

- **Project:** Between its inception in 2006 and 2011, HealthLine was a low-cost 24-hour online medical center manned by licensed physicians and accessible via a 3-digit phone number to GP mobile subscribers for consultation and treatment advice. It reached more than 3.5m unique callers, receiving 5 to 10k calls per day. GP was in charge of infrastructure while TRCL managed day-to-day operations and content for services.

- **Innovation:** GP and TRCL were the first companies to provide low-cost expert healthcare information and advice through mobile phones in Bangladesh 24/7.

- **Sustainability:** The project, entirely market-based, has been successful in bringing basic medical information to rural communities while saving them time and resources. However, the real impact of the solution is difficult to evaluate. The service only provides advice and does not enhance physical access to healthcare or drugs. In addition, the quality of the online consultations depends largely on doctors, and the number of doctors available does not match the demand of the services in such a large population market like Bangladesh. Doctors are hard to retain in a call center, and thus churn is high, which is a challenge for scale up. Finally, although businesswise viable, the service has been discontinued from TRCL to GP from 25th April 2011, showing that working with aligned partners is indeed a requirement for sustainability of mobile health service programs.[47]

HealthLine open day 2006 - GP employee discussing with TRCL Doctor concerning the service
Before offering the medical call center service in November 2006, TRCL kept the medical call center for 4 months during which period all GP employees used the service for quality and feedback purposes.

HealthLine advertisement

[47] However other mobile healthcare services of TRCL are open to mobile users of all telecommunication operators through independent mobile and land phone channels approved by Bangladesh government, while GP continued delivering HealthLine services under its own and separate arrangement.

HYSTRA
hybrid strategies consulting

Project current status

- **Date of creation:** November 2006

- **Service delivered:** All via phone:
  - Medical advice and consultations (i.e. on drugs to take, or the need for emergency care)
  - Referral to doctors based on geographic locations for patients with no doctors
  - Information on facilities and drugs
  - Discount on hospital visits for frequent callers
  - Medical-test report interpretation

- **Benefits:**
  - *End-user:* Better access to healthcare infrastructure; increased health issue awareness; time and cost savings
  - *Rural medical personnel:* Increased income through information and drug sales (ex: pharmacist who sells drugs following HealthLine call) and less antibiotics prescription drugs by independent village traditional practitioners

- **Customers:** 3.5m GP unique callers since 2006, most in rural areas (55%) but also low-income urban workers with little or no access to healthcare

- **Competitive landscape:**
  - *Substitution before project:* Physical consultation in clinic requiring a day's wage due to travel time, round-trip fare and clinic fees; or no consultation at all
  - *Competition:* Since 2009:
    - Banglalink (competing telecommunication operator) and Synesis IT offering Healthlink services at the same rate only to Banglalink subscribers and accessible with same 3-digit number 789. Actually resulting in 10% to 20% additional calls to HealthLine thanks to Healthlink's advertising with same call number
    - Plan of public sector: 481 public health centers at sub-district level equipped with mobile and land lines to answer calls 24-hour/day and provide information at no cost other than regular call rate. Has low number of users due to unreliable service

- **Technology aspects:**
  - *At central and call center level:*
    - Telecommunications and network infrastructure
    - Software tracking locations of calls
    - Triage software: purchased from Fonemed USA (global company)
    - New database software: Oracle Integrated CRM on demand (first application of cloud computing in healthcare industry)
  - *At user level:* Basic mobile phones
  - *Capacity:* Handling up to 240 simultaneous calls (so far only 15 calls at peak hours limited by number of doctors answering simultaneously)
  - *Training needed:* 2-week training on software for doctors (use of TRCL internal and proprietary protocol and procedure)
  - *Data security management:* No data security protocol required as no personal data records are kept. Only random data sampling and voice recordings maintained for a limited time
  - *Maintenance:* Managed by TRCL (contact center, medical portal and service tools, such as software)

- **Business design:**
  - *Staff recruitment process:* Low-cost qualified physicians recruited thanks to company location near concentration of medical colleges and physician practices (currently located within the premise of Bangladesh Institute of Health Sciences in Mirpur). Shortage of doctors (need for 20 in addition to 29 current ones) due to increased recruitment for government (more than 4k recruited for government roles by the end of 2010)
  - *Capacity building:* 2 week training (mostly on clinical content and partly computer training)
  - *Marketing:*
    - Managed by GP
    - Advertisements in Bengali on magazines, billboards, television
    - Key selling points: availability (24h/7) and expertise (qualified and trained physicians)
    - Quality control: In case of complaints (less than 1% of calls), voice recordings are used by TRCL management to follow a doctor's attitude towards callers and for quality and content requirement assessment purposes
  - *Distribution:* Use of GP telecommunications infrastructure. Possibility to access service through intermediaries (Village Phone or healthcare agents). Some promotional material was set up in HealthLine partner hospital premises, but project was deemed not viable and abandoned
  - *Pricing: Initially:* One-time application processing fee of $2.8 (BTD 200) and annual membership fee of $4.2 (BTD 300) for GP subscribers. Modified to simplify use and increase service reach. *Today:* 3min call (includes patient profiling and consultation) for $0.21 (BTD 15), additional time $0.07 (BTD 5)/min, test reports (pathology or radiology) sent via SMS charged $0.14 (BTD 10)
  - *Cost split:*
    - Telecommunications infrastructure by GP
    - Content and operations owned and managed by TRCL
    - Revenue split: 50/50 between GP and TRCL after taxes
  - *End-user payment:* Discounted from GP prepaid airtime bought via phone cards available at local kiosks

- **Regulatory aspects:** Call center licensing and other regulation coordinated by TRCL. Implicit acceptance of online medical services as Ministry of Health followed TRCL methods and protocols for similar government-run service delivery system

- **Monitoring and impact measurement:** Regular internal monitoring and impact assessment for demand, clinical content applicability, customer acceptance and for behavioral modification for preventive measures by TRCL

- **Awards:** 2007 GSM Association Award "Best Use of Mobile for Social & Economic Development"

- **Future plans and next steps:**
  - Partnership between GP and TRCL ending on April 25th 2011
  - GP:
    - Continuation of healthcare services through alternative mechanism with other party
    - Deployment of telemedicine kiosks in rural areas linked to HealthLine (pilot project on hold)
  - TRCL:
    - Continuation of mobile healthcare services through independent mobile and land phone channels approved by Bangladesh government
    - Launch of a dedicated diabetes, hypertension and cardiac programs including telemedicine and intermediaries in the field on 20th April 2011 in partnership with Diabetic Association of Bangladesh, largest private health system in Bangladesh
    - Launch of next generation mobile health applications and services: single patient record, electronic prescriptions, automated referrals, video consultations and test result interpretation
    - Project of transferring call center to doctors' mobile phone or home phone (under discussion with positive feedback from government but not yet legally authorized at time of writing)

HYSTRA
hybrid strategies consulting

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

▪ **Problem magnitude:**
- Lack of primary care physicians: 1 doctor per 4k people
- Presence of undertreated diseases (malaria, tuberculosis, diabetes, cancer…)
- 70% of population in rural areas while 75% of physicians in urban areas
- Only 45% of population with access to healthcare facilities
- Difficult access to health infrastructure (distance, lack of basic information about location and availability, high transaction costs for visit and transport)
- Lack of privacy for patient; particularly an issue for sexually transmitted diseases

▪ **Solution provided:**
- *Tool quality:* Telecommunication infrastructure existed prior to the project but poor coverage (weak signal) in rural areas. Very flexible Oracle database tool
- *Comprehensiveness:* Lack of integration to health infrastructure (no follow-up, no improvement in access to drugs and healthcare facilities), short calls (1 minute on average) do not allow full evaluation

▪ **Scale and reach:**
- *Current users:* 3.5m unique callers since 2006 with 5 to 10k call per day. Limited number of calls taken because of doctor shortage (calls managed based on doctors' availability to allow short wait time)
- *Potential users:* 23.8m GP subscribers (however, 30m mobile owners with no access to service, as service is only offered to GP subscribers)
- 55% calls from rural areas, 77% from women of which 81% are about children's health
- 55% of calls for information and 45% for real consultations

▪ **Acceptance and usage:**
- Easy to use (3-digit call number)
- Rapid attendance: Calls answered within 6 seconds
- Many calls made by intermediaries, mostly family members due to the inability of some population to call (children, elderly, etc.)
- Only offered in Bengali, not available in tribal languages
- 4.36/5 customer satisfaction (external study by AC Nielsen 2008): 59% rating information as excellent, 22% fair. Additionally, 68% rating it as helpful

▪ **Socio-economic impact:**
- *For clients:*
  - Increased awareness and better primary healthcare, especially regarding most common reasons for calls: diarrhea, fever, headache; and also manifestation of long term diseases (more than 90 different health issues covered)
  - Travel time saved for 98% of callers, shorter wait times compared to traditional doctors for 97% (according to external study in 2008)
- *For clinical research:* Basic patient profiling done by doctors (except during peak hours and included in the 3 min call)

▪ **Environmental impact:** Not mentioned

2/ ECONOMICALLY SUSTAINABLE?

▪ **At BoP end-user level:**
- *Initial cost:* Access to mobile phone
- *Service cost:* $0.21 (BDT 15) for 3 min call and $0.07 (BDT 5) for additional minute
- *Average income of beneficiaries:* $50 - $100/month (BDT 4k to 8k)
- *Cost of best alternatives:*
  - *Physical consultation:* ~ $3 (BDT 300) for loss of day's wage, transport and medical fees
  - *Public health line:* Cost of regular phone call ranging from $0.02 (BDT 1.5) to $0.06 (BDT 4.5) for 3min call
  - *Banglalink:* Same cost as HealthLine
- *Avoided costs:* 91% of callers save money and 83% have reduction of doctor's fees
- *Affordability:* 56% of callers' income below poverty line (survey on 253 callers), yet too costly for the poorest (spending $0.70 or 50 BDT/month on airtime) according to HealthLine management and surveyed callers

▪ **At third party level** (health centers, pharmaceutical companies, etc.):
- *Direct revenues:* No commission system by TRCL, following strict medical practice rules to guarantee unbiased information and best ethical practice
- *Indirect revenues:* New patients and clients from HealthLine advice

▪ **At project level:**
- *Employees:* 22 full-time and 7 part-time doctors paid on average $280/mth for full-time (BDT 20k) by TRCL
- *2010 revenues:* $370k (BDT 26.4m) entirely from calls
- *Cost recovery:* Opex and capex, including high cost of marketing needed to attract users, fully recovered
- *Initial funding:* $1m from GP and more than $1m from TRCL

3/ SCALABLE AND REPLICABLE?

▪ **Requirements/ pre-requisites for the project to scale:**
- Partners with similar objectives to agree on expansion strategy (focus on health benefits and advantage to mobile subscribers) and management of potential policy conflicts between healthcare organization and telecommunications organization
- Infrastructure to support expansion at all levels
  - Increased mobile coverage to avoid poor signal or interruption
  - Increased mobile phone use (in Bangladesh 37.2% of population as of end 2010)
- Additional human resources, through:
  - Training more qualified physicians
  - Improving retention of call agents
  - Medical personnel answering calls onsite (in hospitals, practitioners' offices, etc.) instead of in call centers
  - Employing less qualified medical personnel (nurses, etc.)
- Reliable and standardized procedure to streamline consultations

HYSTRA
hybrid strategies consulting

- Less regulation from the Ministry of Telecommunications in order to operate telemedicine from any device (land phone, mobile phone) and to decrease time spent on license applications for telecommunication regulatory compliance and more emphasis on clinical service and content diversifications under Ministry of Health regulatory framework
- Clear guidelines from the Government concerning mobile health notably to avoid conflict between telecommunications and health partners, as well as medico-legal risks for doctors answering HealthLine calls

▪ **Additional requirements/ pre-requisites for the project to replicate:**
- High need and demand for primary healthcare information
- Openness of health and telecommunications regulation
- Existence of sufficiently reliable telecommunications infrastructure
- Wide enough access to mobile phones to ensure breakeven number of users
- Partnership with MNOs to route calls and collect payments
- Existence of low-cost qualified health personnel to limit recurring costs

THE PEOPLE

STORY OF THE ENTREPRENEUR

Mr. Zakir is a successful businessman committed to bringing better healthcare to Bangladesh. He recalls how he started this initiative: "I was working in the United States in the telemedicine sector and I came back, founded TRCL in October 1999 to bridge the knowledge gap between medical sciences and resources of developing countries with that of developed countries. One night in July 1999, my three-year old daughter started breathing difficultly at 2 am. Even though I am part of a privileged family, my wife and I are both doctors and my father was the head of the anti corruption bureau; and even though we lived in the capital, we could not contact any medical facilities. We had to wait until 7 am in order to go to the hospital. I then thought of all the other people who lived outside of the capital in rural areas and their lack of access to basic healthcare. And I started planning to create a single point of access to the health system and service for common people. I chose mobile phone infrastructure because of its increasing popularity in Bangladesh from the very beginning of mobile phone service introduction. In 2002, I set my mind to work with

INTERVIEW WITH JEWEL BARUA, GP, AND DR. SIKDER M. ZAKIR, TRCL

▪ "What are your 3 key distinctive features?
  JB: 1) It is the first service in Bangladesh where people have access to a doctor's consultation over the phone.
  2) Doctors provide this service "live" over the phone.
  3) This is a 24/7 based service.
▪ "What are the 3 key challenges you have faced?
  JB: As we depend on the vendor to provide the telemedicine service, we face several challenges. First, we don't have enough control over the agents recruited by TRCL. Secondly, we have to face a few technical problems because of the system's limitations. And third, this service is inexpensive in terms of doctor's fees considering our country, but it charges BDT 15 for the first 3 minutes and people from rural areas who only recharge BDT 50 in a month may feel it is too expensive.
  SMZ: First, there is real shortage of doctors in Bangladesh and we face difficulties finding doctors to scale up. Second, we need more capital to expand and third, there is too much telecom regulatory intervention in the telemedicine sector. Licenses are quite difficult to obtain and very time consuming.
▪ "What is the main policy or institutional change that would help your project grow?
  JB: Doctors need to be more humble, and the service needs more promotion to be known.

mobile phone as a delivery vehicle as this is the most widely used daily tool for people (rich or poor), which made my reach to common people much easier (where lack of information and ignorance of health issues cause unnecessary sufferings) as well as for common people to increase access to healthcare information (right time, right information for right intervention). A couple of years later, people from GP noticed me on television at a national conference on telemedicine and contacted me. 18 months later, HealthLine was born."

Dr Sikder M. Zakir, Managing Director of TRCL and Erik Aas, former Managing Director of GP while he visited the medical call center of TRCL following GSMA Global Mobile Award 2007 declaration

Exchange rate: BDT 71 for 1 US$

SMZ: Less regulation from the telecom authorities to enable the healthcare companies to take care of healthcare. Mobile operators should appreciate the fact that mobile health is not a telecom service, it's a medical service using mobile phone infrastructure as vehicle, and mobile health tools are not replacing conventional medicine, rather increasing its proper delivery and reach by many fold.

▪ What is the main internal capacity or resource that would help your project grow?

JB: The number of available doctors is insufficient to provide this kind of service. We need to motivate more doctors to go in the telemedicine sector and train them to provide a better service.

▪ What is the top one wish you would have that would help your project grow?

JB: We are currently providing general health related information and consultation and we would like to hire and attract specialized doctors under this project to increase the scope of our services.

▪ What are the reasons of the termination of the partnership between GP and TRCL?

SMZ: This has been done due to a conflict of policy. This indicates that when there is no clear guideline from the government, in mobile health applications and services, there is a risk of policy conflict between healthcare organizations and telecommunication organizations in addition to the business modeling challenge. It may not be true in countries where mobile health is governed by healthcare regulatory authorities."

Sources:

Interview with Jewel Barua, Commercial division of GP on January 25th, 2011 and Dr Sikder M. Zakir, CEO of TRCL on February 7th, 2011

Grameenphone website: www.grameenphone.com

A doctor in your pocket: Health hotlines in developing countries, Ivatury Gautam, Moore Jesse, Bloch Alison, Available at: www.gsmworld.com/documents/a_doctor_in_your_pocket.pdf

Bangladesh to introduce countrywide "telehealth care services", Available at: www.cctv.com/english/special/techmax/20090108/101361.shtmlEvaluating the impact of mobile phone based "health help line" service in rural Bangladesh, Dr Md Mahfuz Ashraf, Noushlin Laila Ansari, Bushra Tahseen Malik, Barnaly Rashid, Available at 109.73.162.110/~humanito/sites/default/files/Research%20Track%20-%20Full%20Papers_0.pdf

Contact persons for the project:
Barua Jewel, Commercial division of GP
Dr. M. Zakir Sikder, CEO of TRCL

HYSTRA
hybrid strategies consulting

OTHER EXAMPLES OF HEALTH CALL CENTERS

Healthlink: Bangladesh (2009)
- *Reach:* N/A
- *Price:* Same price as HealthLine: $0.21 (BDT 15) for 3 min call and $0.07 (BDT 5) for additional minute only available to Banglalink's subscribers
- *Business model specifics:* Joint venture between Banglalink and Synesis IT

Government project: Bangladesh (2009)
- *Reach:* Irregular service leading to small number of users
- *Price:* Free of charge for the service, only telecommunication fee (mobile or fixed line)
- *Business model specifics:* Not present nationally but at the sub district level

MedicallHome: Mexico (1998)
- *Reach:* 1m users today out of 10m Telmex landline subscribers
- *Price:* Subscription $5 monthly for unlimited calls
- *Business model specifics:*
  - Only available to Telmex fixed-line telephone subscribers
  - Higher BoP targeted

HMRI: India (2007)
- *Reach:* 4.4m unique callers
- *Price:* Toll free number
- *Business model specifics:*
  - Governmental project run by the state of Andhra Pradesh
  - Integration with in-field service: 40k onsite workers and 475 mobile health clinics (vans)
  - Use of protocol questions

Teledoctor: Pakistan (2008)
- *Reach:* 500k unique callers
- *Price:* Fee of $0.3 per 3min call
- *Business model specifics:* Service only available to Telenor Mobile phone subscribers

Fonemed Asia Pacific / Ask PLDT: Philippines (2008)
- *Reach:* N/A
- *Price:* $3.5 (P150) per call with no time limit for consultation
- *Business model specifics:*
  - Service only available to PLTD postpaid landline subscribers
  - BoP not targeted, only high income household
  - Phone consults by registered doctors but also nurses
  - Use of protocol questions
  - Other services offered: news, weather cast, entertainment, etc.

Source: A doctor in your pocket: Health hotlines in developing countries, Ivatury Gautam, Moore Jesse, Bloch Alison, Available at www.gsm-world.com/documents/a_doctor_in_your_pocket.pdf

Real-time verification for drug authenticity over mobile phone in several African countries

Executive Summary:

- **Organization:** mPedigree is an African-based for-profit company spun out of a non-profit organization, which was founded by a Ghanaian social entrepreneur.
- **Project:** Launched in 2007, mPedigree works with mobile operators and pharmaceutical manufacturers to provide a mobile phone-based drug verification system for addressing the issue of the prevalence of counterfeit drugs in pharmacies at the point-of-sale, currently offered in Ghana, Kenya, and Nigeria.
- **Innovation:** The mPedigree service is free to users and allows the consumer to instantly verify whether a drug in a pharmacy is real or counterfeit by sending a unique identification code via simple SMS and getting an automated response in appropriate language. The service relies on various partners across the value-chain (both private and public actors) while remaining simple to roll-out to new customers and easy to access for the end-user.
- **Sustainability:** mPedigree is providing both health benefits to the consumer and broader tracking and data collection on counterfeit drugs, yet it only addresses this specific issue in the health care value chain which makes its direct health impact hard to measure. Within 3 years, mPedigree has forged partnerships with HP, the main mobile network providers in the countries in which it operates (24 telecommunications operators as at February 2011) – with plans to have partnerships with over 32 telecommunications operators by the end of 2011, has been endorsed by multiple governments, has multiple pharmaceutical manufacturing clients, and is on target to both break even and reach profitability in 2011. It has quickly spread its service in 3 countries, with activities underway to launch in Cameroon, Tanzania, Uganda and Bangladesh. Although the service to end-users is free, a focused marketing effort is required on the part of mPedigree to continue to grow its user-base, a priority for the organization in 2011.
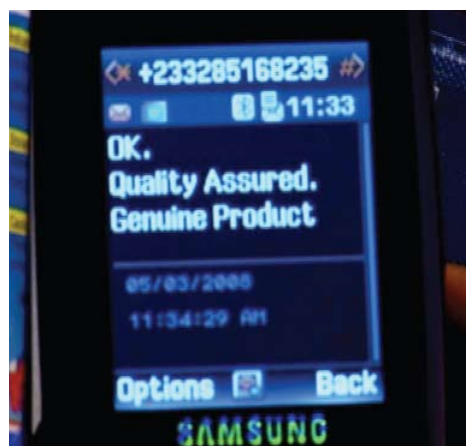
SMS ensuring drug is genuine in Ghana

Project current status

- **Date of creation:** 2007 in Ghana; December 2010 in Nigeria; soft launch in Kenya in 2010 with hard launch in 2011; Cameroon and Tanzania expected in 2011

- **Product / service delivered:** Mobile-based verification platform which:
  - Allows consumers to verify the authenticity of drugs and medicines in real-time from point of purchase
  - Allows pharmaceutical and distribution companies to increase consumer trust in brand and counterfeit tracking
  - Provides complimentary anti-counterfeit service to regulatory agencies

- **Users:** All medicine consumers: On target to reach over 2m consumers and over 6m products successfully protected by December 2011

- **Customers:** Major regional generic producers: KAMA, Fidson, May & Baker. Medicines include: amoebicides, anti-malarials, nutritional supplements, oral hygiene agent

- **Benefit to end-user:** Verification of drug authenticity avoiding side effects and ill-spent money on fake drugs

- **Competitive landscape:**
  - *Substitution before project:* No options for individual consumers; government regulatory agencies addressed counterfeit problem alone
  - *Competition:* Similar models (see box at end of case): Sproxil (Nigeria, common market with mPedigree, and other African countries) and PharmaSecure (India)

- **Partners involved:**
  - *Telecommunication companies:* Providing network on which mPedigree platform operates, while mPedigree offers them an additional service to offer to customers, and a new source of revenues from additional SMS
  - *Hardware and server multinationals:* Providing data security, network back-end services, and all back-end IT related operations
  - *Printers – local and multi-nationals:* Printing for mPedigree tracking and packaging, enabling mPedigree to offer turnkey approach to the clients
  - *CSOs, National Government and Regulatory Agencies:* Providing mPedigree with access to government entities in newly-launched countries (i.e. Tanzania), using mPedigree service for public health purposes, and providing awareness campaigns[48]
  - *Ashoka:* Helpful in networking and providing some funding

- **Technology aspects:**
  - *At user level:* SMS sent to short code through mobile phone subscribed to partner network
  - *At printer level:* Scratch off code incorporated directly on package
  - *At central level:* HP for server management and maintenance, and data security
  - *Training needed:* None for end-user (simple messaging); IT training for employees, and NGO and government partners
  - *Data security management:* Managed and maintained by HP (servers in Ireland and Germany)

---

[48] The non-profit arm of mPedigree in Ghana was useful in securing goodwill in that country; mPedigree partners with orgs in new markets to navigate regulations of the countries for launch and advocate for mPedigree: Health Access Network in Ghana; West Africa Health Organization for West African countries; Ministry of Medical Services eHealth Office in Kenya.

- **Business design:**
  - *Staff recruitment process and capacity building:* Training on IT and human security for staff; local staff in each country is kept lean
  - *Marketing:*
    - *Positioning:* Counterfeit drugs are not cheaper to consumer than authentic drugs: verification ensures user receives real value. Everyone should be able to use data to access appropriate information about medicines
    - *End-user pricing policy:* Free service for user with high added benefit for use
    - *Awareness and marketing campaigns:* Provided by non-profit arm and government partners in different countries. Primarily visual ads at point of sale
  - *Distribution:* Managed by manufacturing companies
  - *Service pricing:* Volume-based for pharmaceutical companies
  - *Cost and revenue split:* Revenues from generic pharmaceutical manufacturing companies
    - Cost of SMS (at discounted price for volumes), printing and marketing, paid by mPedigree
    - Distribution and some marketing costs borne by pharmaceutical companies and government

- **Regulatory aspects:** Standard for drug authentication over mobile phone introduced by National Agency for Food and Drug Administration and Control of Nigeria (NAFDAC).
  Similar standard under consideration in Kenya following support from the Ministry of Medical Services at cabinet level. No such partnerships in Ghana

- **Monitoring and impact measurement:** Not measured to-date

- **Awards:**
  - 2011: UNESCO Grand Prix NetExplorateur
  - 2010: 2010 Global Security Challenge as 'best security start-up' ($200k)
  - 2009: Forum Nokia Calling All Innovators 1st Place Prize for emerging markets, Tech Awards- Nokia Health Award winner

- **Future plans and next steps: Main focus in 2011:** Local marketing to increase user base; expansion into Cameroon, Tanzania, Uganda, Bangladesh and India is in process with launches expected in 2011

User checking his medecine authenticity in Nigeria

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

▪ **Problem magnitude:**
• *In Nigeria:* 80% fake out of medicines on sale in pharmacies in 2002; above 40% now
• *Worldwide:* 10%-30% fake drugs in developing countries

▪ **Solution provided:**
• *Tool quality:* Available on at least 80% of country-wide mobile network (currently at 100% in Ghana, 99% in Kenya, 90% in Nigeria), across any hardware phone; simple application requiring minimal user training
• *Service quality and comprehensiveness:* Highly targeted, highly valuable information but service limited to drug authentication (no other role in health value chain)

▪ **Scale and reach:**
• Over 6m packets to be tagged by mid 2011
• Expansion into 3 new countries in past year

▪ **Acceptance and usage:**
• *Acceptability:* Available in different languages where applicable. Not yet known enough, requiring additional marketing
• *Usability:* Easy to use, requiring minimum training

▪ **Socio-economic impact:** Increased transparency of drugs for better health of consumer

▪ **Environmental impact:**
• Not mentioned explicitly
• Relying on user's mobile phone, thus not requiring purchase of new hardware

▪ **Other impact:**
• *For citizens:* mPedigree seen as the '911' for counterfeits countries of operation, providing a mechanism for patients to report suspected counterfeit drugs
• *For government:* New solution to public health issue, lessening burden and increasing efficiency of counter-fake drug actions through mobile application replacing government raids
• *For pharmaceutical companies:* Increased brand recognition and trust of consumer, increased sales

2/ ECONOMICALLY SUSTAINABLE?

▪ **At BoP end-user level:**
• *Initial cost:* Access to mobile phone
• *Direct cost of services:* Free
• *Additional indirect cost:* Transport to pharmacy and cost of drugs
• *New economic opportunity:* Less money spent on ill-suited drugs; potentially more working days from recovered health
• *Ability to reach the poorest:* Not specifically targeting the BoP; currently 90% of service urban areas, i.e. majority of users from middle-/ upper-incomes; once at scale, should diminish occurrence of fake drugs countrywide and thus have considerable impact for BoP

▪ **At local organizations (pharmacies):** No additional cost

▪ **At third party level** (pharmaceutical companies):
• *Initial cost:* None
• *Direct cost of services:* Fee-for-service basis (subscription-based model, fee linked to volume of codes)
• *New revenue source:* Increased sales from decrease in fakes

▪ **At project level:**
• *Staff:* 6 full-time, 3 part-time, 3 volunteers
• *2010 profits:* Sales of codes to pharmaceutical companies minus cost of SMS purchased to telecommunications operators at discounted rates, cost of printing, and overheads
• *Breakeven point:* Planned profitability and breakeven in 2011
• *Initial funding:* 2010: $200k (Global Security Challenge) and resources from founder and supporters

3/ SCALABLE AND REPLICABLE?

▪ **Requirements/ pre-requisites for the project to scale:**
• Partnerships with telecommunications companies to ensure that service is provided to 80+% of mobile network coverage (subscriber base)
• Willingness of pharmaceutical manufacturers to use and support service for more medicines
• Additional support from governments to help in awareness and marketing effort
• Increase in focus on local marketing of service to users for more systematic use

▪ **Additional requirements/ pre-requisites for the project to replicate:**
• Movement of pharmaceutical companies to support use of service on broader set of medicines and drugs
• Relationships with national government to support the system in each country and accelerate end-user's buy-in
• Partnership with local telecommunications providers for discounted SMS
• Encryption/decryption capability for files and codes
• Design of appropriate automated language identification technology use in multi-lingual countries

Pharmacist showing mPedigree scratch code to user in Nigeria

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF THE ENTREPRENEUR

Bright Simons was always an activist and involved in student politics while in University. He was active in human rights in Ghana, and due to those activities needed to leave Ghana for political reasons. As a Marie Curie fellow in Europe, conducting research on migrant workers, Bright realized that he "could do something with [his] hands, leading to direct outcomes," as opposed to only taking the activist/awareness approach.

While looking at economic empowerment issues and looking at ways to improve African farmers' access to European markets, he found they were unable to compete on a level playing field. As a result he came up with the concept of organic certification in 2004/2005, which aimed to bridge the gap between African goods and the European market.

While at secondary school, Bright was poisoned by a food item and had great difficulty in getting access to the medicines he needed. Bright nearly lost his life at this time. The experience stayed with him for a long time and led him to ask himself whether he could use technology in a simpler way, and work with companies who have greater resources to ultimately help the average person. mPedigree was founded based on these experiences – the culmination of health, technology, and social awareness.

Bright is extremely aware of all of the other issues that surround the issue of counterfeit drugs and medicines due to his history of activism and research, and this allows him to also take a role in solving the problem. In 2008, Bright was elected an Ashoka Fellow, and in 2010, he was conferred with an Archbishop Desmond Tutu Award by the African Leadership Institute.

INTERVIEW WITH BRIGHT SIMONS, FOUNDER AND PRESIDENT

- "What was your aha moment? *I've realized that the combination of simple technology with the right resources can have impact on peoples' lives in very tangible ways. When I had a near-death experience related to finding drugs that were reliable, I knew I had to move into this space.*
- Why has your model not taken up the world yet? *We are a young company and are expanding throughout Africa. Additional partners will be required before our service can be truly global.*
- What is the main policy or institutional change that would help your project grow? *Ideally, policies should be promoted to create greater data competence and data confidence in the markets. Accurate data about the quality, cost and price of things in the market, especially in Africa, is required for people to operate effectively and ultimately so that the consumer is empowered. If people understood the way the market works in Africa, for example, with regards to medication, then standardized data and data quality standards could be set.*
- What is the main internal capacity or resource that would help your project grow? *Capacity to focus on marketing the service to local users, which is a top priority in the short- and medium-term, is a necessity. That, and also the roll-out of the new technology we have developed, which can provide authentication without requiring printing of codes on medicines, will allow our program to scale more rapidly."*

Sources:

Phone interviews with Bright Simons on December 23rd, 2010, January 14th, 2011, February 1st, 2011, and meeting on March 1st, 2011

Ashoka Fellow database and information

mPedigree website: www.mpedigree.net

mPedigree fact sheet provided by Founder

Dialing for Development: How Mobile Phones are Transforming the Lives of Millions, World Intellectual Property Organization (WIPO) Magazine, September 2010, Available at h30507.www3.hp.com/t5/Data-Central/HP-and-mPedigree-Combating-counterfeit-drugs-to-save-lives/bc-p/85949

Fighting Counterfeit Drugs With Mobile Technology, Fast Company, December 6, 2010, Available at www.fastcompany.com/1707667/hp-and-mpedigree-fight-counterfeit-drugs

Kenya launches mobile phone application to fight counterfeit Medicine, Kenya Broadcasting Corporation, December 3, 2010, Available at www.kbc.co.ke/news.asp?nid=67851

Contact person for the project:
Bright Simons, President: bbsimons@mpedigree.net

OTHER EXAMPLES OF MOBILE DRUG AUTHENTICATION SYSTEMS

Sproxil: Incorporated in 2009 in the USA and in Nigeria (endorsed by NAFDAC), and incorporated since in Kenya, Ghana and India. Over 250,000 SMS processed as of June 2011. Similar model except:

- Initially working with distributors mainly (with manufacturers' agreement to add labels on their products), now also with multinationals and generic drug manufacturers, to place codes on drugs before they reach pharmacies
- Partners with a telecommunication intermediary in Nigeria, which aggregates all telecommunications operators, instead of creating partnerships with each operator individually – in other countries, connects directly to telecom companies
- Operates on GSM and CDMA mobile networks. In addition to SMS messaging, offers new technology for mobile web-based authentication, available to authorized users only, currently used by clients in Nigeria

PharmaSecure: Founded in 2009 in India. Similar model except:

- Model focuses on scalability, using codes printed directly on drug packaging to achieve high volumes for maximum impact; over 100 million already committed for 2011, targeting to reach 1 billion
- Partners with telecommunications aggregators, IT companies and printer manufacturers to deliver seamless factory integration, enabling rapid adoption by manufacturers; shortcode, longcode and toll-free numbers all available as options for SMS verification
- Offers capability to track products, and provides option for consumers to opt in to receive tailored messages based on purchase history, for drug adherence and other issues

Source: Phone interviews and email exchanges with Dr. Ashifi Gogo, Sproxil CEO, and Taylor Thompson, co-founder of Pharmasecure
For more information see www.sproxil.com and www.pharmasecure.com

Reuters Market Light

Keeping Indian farmers updated through agro-SMS

Note: At time of writing, RML informed us that they were going through strategic change to ensure scale-up in India at the soonest before taking their model to other parts of the world. Thus the information below may not accurately describe the new version of RML business model at time of publication. We would like to thank RML for accepting to publish it in spite of possible differences with their newer business model and apologize to the reader for potentially outdated information.

Executive Summary:

▪ **Organization:** Thomson Reuters is a large multinational company focusing on intelligent information for businesses and professionals. With headquarters in New York and major operations in London and Eagan, Minnesota, Thomson Reuters employs more than 50,000 people in 93 countries.

▪ **Project:** Started in 2007, Reuters Market Light (RML) provides individual farmers with customized, localized and personalized weather forecasts, local crop prices, agricultural news and relevant information (e.g. information influencing market prices) – in the form of SMS messages sent to their mobile phones in their local language. Till 2010 (date of commercial launch), several hundred thousand people across 13 states in India have subscribed to RML and 300 to 2,500 subscriptions are added every day.

▪ **Innovation:** *Product Innovation:* RML Direct is the first ever scratch card allowing to benefit from such an information service via all handset models and on all service operators. *Process innovation:* Sourcing process for news and market data from the widely fragmented market has been continually improved (notably in terms of setting up a proper database for such a massive amount of information), as well as the service delivered, through customers' needs assessments. *Business model innovation:* RML has built its entire operating model from scratch – from content sourcing through to delivery and customer support. This industry sector – personalized professional information services for farmers – did not exist until RML launched the business in 2007.

▪ **Sustainability:** RML has proven that it is able to deliver high quality information service to farmers in rural areas at a reasonable cost for end-users. The service has improved their profitability through knowledge of market prices, mitigated weather-related risks through forecasts and improved knowledge of crop cultivation and disease control, while generating revenues for RML in 2008 onwards. Scale and replicability depend on the ability of RML to extend its distribution network, management of high quality content and sustained funding.

Project current status

- **Date of creation:** October 2007

- **Product / service delivered:** Customized, localized and personalized weather forecasts, local crop prices, agricultural news and relevant information – in the form of SMS messages sent to individuals' mobile phones in local language 4-5 times a day

- **Benefits for users:**
  - Access to up-to-date information allowing to improve agro practices, i.e. plan irrigation, application of fertilizers, and harvest – thus, better managing risk and decision of when and where to sell produce to maximize profit
  - Mobility flexibility, improved convenience and time and travel savings

- **Customers:** Individuals working in the agricultural sector in India (especially farmers). Over 400k subscribers across more than 12 states in India (Maharashtra, Madhya Pradesh, Uttar Pradesh, Punjab, Haryana, Rajasthan, Gujarat, Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu), 0.3k-2.5k new subscriptions/day. Targeting small farmers (5-7 acres, 10% of total farmer workforce in India), i.e. 60m people

- **Competitive landscape:**
  - *Substitution before project for agro information:* Input from dealers/shop owners, radio/TV/Newspaper, crop advisory services or information sharing from other farmers (national survey of 2005: only 40% farmers used these information sources) or initiatives such as ITC eChoupal kiosks (see case study on p.88)
  - *Competition:* Still limited but growing number of players offering similar mobile information services, e.g. TATA Consultancy Services through SMS, government initiative Kissan Kerala through web platform and tele-advisory line, and non-commercial organization IFFCO Kisan Sanchar Limited's (IKSL) through free voice message for cooperative members

- **Partners involved:**
  - *Content:* Sourced largely from RML's own network and resources, except for national market data, weather information and best practices advisory:
    - Memorandum of Understanding (MoU) with Maharashtra State Agriculture Marketing Board and Punjab Mandi Board for market data from APMC Mandis across the states
    - Agricultural universities and institutes in Maharashtra and Punjab for crop advisory content (data shared free of cost by Institutes, then aggregation and translation into local languages done by RML's content team). Also regional crop advisory specialists with specific knowledge of a particular region (and language) are taking care of crop advisory
    - 1.8k weather stations globally to provide local weather information (50 km radius to farmers)
  - *Distribution:* Through trade partners, such as mobile service providers Idea Cellular in Maharashtra and Goa, the Indian Post Office, Bhairavnath co-op credit society, agri-product companies as BioStadt India Limited (1.5k distributors and 20k retailers nationwide). And RML was the exclusive provider of agri information to Nokia for its Life Tools program (Maharashtra)

- **Technology aspects:**
  - *At local level (farmers):* SMS on mobile phone. Call to a given number to specify information preferences and activate service (done within 48 hours)

- *At central level:* Content sent by reporter to chief reporter for quality check. After approving chief reporters sends the info to central database. Formatting and categorization of content at central level to suit SMS/Voice/WAP platforms managed by RML's content management system. Delivery of SMS managed by service providers
- *User training:* Community education done face-to-face at local village meetings and demonstrations at haats (weekly markets in district town)
- *Data security management:* Internal
- *Maintenance:* Internal

▪ **Business design:**
- *Recruitment process:* "Content reporters" monitoring and reporting market prices daily recruited by third parties (recruitment agencies), notably among undergrad students who do reporting as part-time job by going to the mandis before or after their classes
- *Marketing:*
  - *To distributors:* By RML's Sales and Marketing Division, developing new relationships with distributors throughout the country and deepening existing relationships
  - *To clients:* Mostly through below-the-line activities like wall paintings, banners, posters, van campaigns, market activities, etc. Further word of mouth advertisement through key opinion makers influencers such as village "sarpanches" (chiefs). Additional marketing done by distributors, e.g. fertilizer companies promoting the purchase of RML through their distribution network
- *Quality control:* Multi lingual customer support system for questions or complaints
- *Sales and distribution:* Primarily directly through agri-retailers
- *Cost and revenue split:* Revenues from sales accruing to Reuters. Marketing costs partly borne by distributors, other costs borne by Reuters, including content reporters paid through recruiting agencies
- *Pricing and payment:* Cash purchase of prepaid scratch cards (RML Direct), toll-free line for service activation

▪ **Monitoring and impact measurement:** Internal only: Client survey at end of pilot in 2008 leading to adjustment with relevant services (initially only providing weather and crop advisory, completed with price information from closest mandis, commodity news and local news; also adjusted to be provided in local languages). Now, yearly impact assessment (notably on customer growth and satisfaction, and economic benefits)

▪ **Awards:** Several rewards acknowledging success in setting up a pioneering information service improving lives of India's farming community, e.g. World Business and Development Award (WBDA) in 2010, FT & Justmeans Social Innovation Award in 2010, Coffey International Award, UNDP accolade in 2008

▪ **Future plans and next steps:**
- Extend distribution network and breadth and depth of content like wind information and electricity information
- Introduce RML in other developing countries

RML Info available in local language in Nagpur, Maharashtra

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** Mainly subsistence agriculture in India: 23% GDP, 65% of workforce, ie 262m people in agricultural sector and 130m cultivators. Very low prices for produce, huge wastage in crops and resources and poor bargaining power

- **Solution provided:**
  - *Tool quality:* SMS broadcast: Robust technology, widely known and used though expensive data transfer solution
  - *Availability:* Any simple mobile phone, not dependent on mobile operators nor handsets. Though not mentioned explicitly in information sources, availability of network is a prerequisite for receiving RML service
  - *Comprehensiveness:* 4-5 SMS a day covering most information needs, but no other needs of farmers. Maximum of 160 characters so limited information in each SMS

- **Scale and reach:**
  - Voucher cards available at thousands of rural outlets ranging from post offices, to NGOs, large groups, mobile service providers and agribusiness chains
  - Several hundred thousand subscribers in 15k villages across 13 states in India, 0.3 to 2.5k additional subscriptions every day
  - Goal: Prove the business model by end 2011

- **Acceptance and usage:**
  - SMS well tailored to subscriber in 14 local languages, but barrier for illiterate users
  - Evaluated as "easily accessible" across all handsets and telecommunications operators
  - High perceived quality due to availability of service, simplicity of tailored information, local language support, good timing of information sent (clients can choose the language, timing and type of information that they receive)

- **Socio-economic impact:**
  - *Economic:* Increase in crop yields and improved productivity. $8k: Highest reported saving by farmer thanks to providing transparency and relevant information
  - *Behavior change:* Modification in harvesting and selling times for ~70% of subscribers after using the technology
  - *Social:* Anecdotal: More respect from fellow farmers and agricultural traders for RML users. Emotional value proposition from RML considered very high by farmers

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Investment cost:* Access to a basic mobile phone
  - *Cost of service:* Free subscription and activation (toll free line). Service packs: quarterly (350 INR/$7), half-yearly (500 INR/$10) and annually (999 INR/$20)
  - *Average household income:* Medium scale farmers with income from $2 a day (3-month RML pack costs the equivalent of 4% of the income of the poorest farmers)
  - *Income increase:* According to RML customers, annual income increase by 5% to 25% thanks to service

- **At project level:**
  - *Employees:* 50 full-time employees and approximately 300 reporting staff in 2010
  - *Revenues:* Over $1m in 2009
  - *Initial funding:* Several $m invested by RML

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Extending distribution network
  - Additional internal funding and skilled employees to aggregate and distribute in depth content customized to different states in India

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Good understanding of customers in specific replication area, in order to customize service adequately
  - Entrepreneurial team willing to take risks and work through trial and error process, and if led by large corporation, support from higher level in organization
  - Sufficient penetration of mobile phone

Sarang Pimple, undergrad student in IT and market reporter for RML, at Nagpur mandi…

…And his tools: cell phone sending codes for crop prices and RML market reporter card

ASHOKA **FULL ECONOMIC CITIZENSHIP**

THE PEOPLE

STORY OF THE ENTREPRENEUR

Mr. Amit Mehra, holding an MBA from the London Business School, is the founder and managing director of Reuters Market Light.

He joined Thomson Reuters in November 2001 in the London office as Manager, New Business Development and was the Vice President of Content Operations till he became the Managing Director of RML. At Thomson Reuters, Amit has led and managed a range of business development, new venture development, growth strategy and operational initiatives.

Reuters set up a yearly innovation program focusing on long-term, transfer-based opportunities. In 2006, more than 100 ideas came up, among which that of reaching farmers with localized, specialized and individualized content. The idea was selected for implementation, and this is how in 2006, Thomson Reuters set up RML.

Mr. Amit Mehra decided to give up his job as the Vice President for Content Operations and became Managing Director of RML. After 2 years of piloting concluded by a survey of the 2.5k farmers involved in the pilot, the service was adjusted to their needs and commercialized in 2008.

INTERVIEW WITH AMIT MEHRA, FOUNDER AND MANAGING DIRECTOR OF RML

- "Why are you doing all this?
RML looked like a challenging, socially meaningful and viable initiative. That's why I picked up the idea of a colleague and started building it in 2006.
- What are key features of the RML model that made it work so well?
1) RML understands exactly what information the customer wants. The service is very simple and offered at the right time.
2) The freedom and independence that our team got from Thomson Reuters allowed this project to work. In order to set up an organization like RML you need that freedom, and a team of people willing to take risks and try things out. Only then will you be able to innovate.
- What would be your key advices to replicate RML in other geographies?
1) The most important and real number one is: do not lose the interaction with the customer, really understand the pain points. For example evaluate them by focus groups and surveys. That is really fundamental.
2) In such a large organization as Reuters, it is crucial to have a structure that is independent from the main business, as there may be many aspects that can conflict. You need separate teams, separate governance and separate funding, allowing the team to make mistakes.
3) Select a good team; not everyone is suitable to have such a dynamic, unpredictable life. An entrepreneurial spirit is fundamental, especially in the beginning. It has less to do with people's qualifications, and more with the belief that this is the right thing to do.
- What is the one key internal resource that you still miss?
Our key internal missing resource is not so much on having the right technology or value proposition. What is missing is an innovative marketing and sales model.
- What is the top one wish you would have that would help your project grow?
The concept of buying information services is new. It would help immensely if the government would promote this. It would make customers more comfortable when we approach them. Consequently we could put more resources on further improving ourselves, instead of focusing on consumer education."

Exchange rate for this case study: 1USD=50INR

HYSTRA
hybrid strategies consulting

Sources:

Interview with Amit Mehra, Founder and Managing Director, on January 28, 2011

Interview with Vilas Dhabale, RML client on February 15, 2011

Visit to Nagpur office and interview with Shrinivas Pande, Chief Marketing Reporter, and Sarang Pimpale, Marketing Reporter at Nagpur's Kalamna Market yard on February 14, 2011

Exclusive Interview With Amit Mehra – MD, Reuters Market Light – Enlightening Farmers, Rajiv Dingra, 2009, Available at: www.watblog.com/2009/11/18/exclusive-interview-with-amit-mehra-md-reuters-market-light-enlightening-farmers/

India: Smart farming via Reuters mobile alerts, Jaideep Hardikar, 2011, Available at: southasia.oneworld.net/ictsfordevelopment/india-smart-farming-via-reuters-mobile-alerts

Reuters Market Light (RML): Creating Efficient Markets, Bimal Arora and Ashley Metz Cummings, 2010, Available at: growinginclusivemarkets.org/media/cases/rml_summary.pdf

Reuters Market Light wins Award for Innovation, Thomson Reuters, 2010, Available at: thomsonreuters.com/content/news_ideas/articles/financial/RML_wins_award

Contact person for the project:
Mehra Amit, Founder and Managing Director: Amit.Mehra@thomsonreuters.com

ASHOKA **FULL ECONOMIC CITIZENSHIP**

HealthPoint Services Consultation

HealthPoint Services Device testing

5. Value added services through local agents

Summary

Services described in this section are provided via "local agents", i.e. people with a minimum of education who act as the interface between technologies and end-users. Compared to "direct access", this model overcomes the need for technology ownership and minimum literacy level, and can thus potentially reach deeper into the BoP. It can also offer more extensive and complex services than direct access as it includes a human intermediary between the technology and the end-user. Such services can either be very specialized, such as telemedicine consultations, or can use the physical infrastructure in place for their agent network to cater to a range of needs – not necessarily all ICT-based. This "diversification" is a necessity for local agents to remain economically viable today, since only selling "ready made" information is not a strong enough value proposition against what cell phones can increasingly offer via direct access models.

This model requires smaller initial investments than the direct access model to design tailored technology services, as local agents do the last mile customization. However it needs a sustained financing mechanism for the initial set-up costs of each agent (including technology, but also the cost of selecting and training agents). Once established, trusted agents (typically chosen among opinion leaders) can easily sell new services, thus not requiring as heavy marketing expenses as direct access models do. This model can also benefit from multiple sources of revenues due to its wide range of services – from fees for expert consultations to commissions on products sold through this channel.

Challenges are thus to identify and recruit new agents rapidly to scale, to fund expansion (rather than the initial service development) in terms of financing these new agents as well as training them to become trusted and informed sales people, and to find "aligned" partners to offer a wide enough range of relevant services. Additionally, as each agent must typically serve several hundreds of people to be viable, this model will only make sense in dense enough areas.

The use of ICT for development has faced two key challenges in addressing the needs of BoP populations: their difficulty to access content on technology platforms – be it for illiteracy or lack of knowledge of the technologies – and the initial cost of technology ownership. A business model that has emerged naturally to overcome these two challenges is the leverage of an intermediary or "local agent", that acts as the interface between the end-user/ beneficiary and the technology, enabling the beneficiary to get service without purchasing and learning how to operate expensive devices.

The "local agent" model: specialized services delivered by trusted intermediaries

Technology backend – source of information and service

Technology front end at local agent's

Technology front end at local agent

Technology front end at local agent

End-user benefiting from the service: no need for ownership of technology
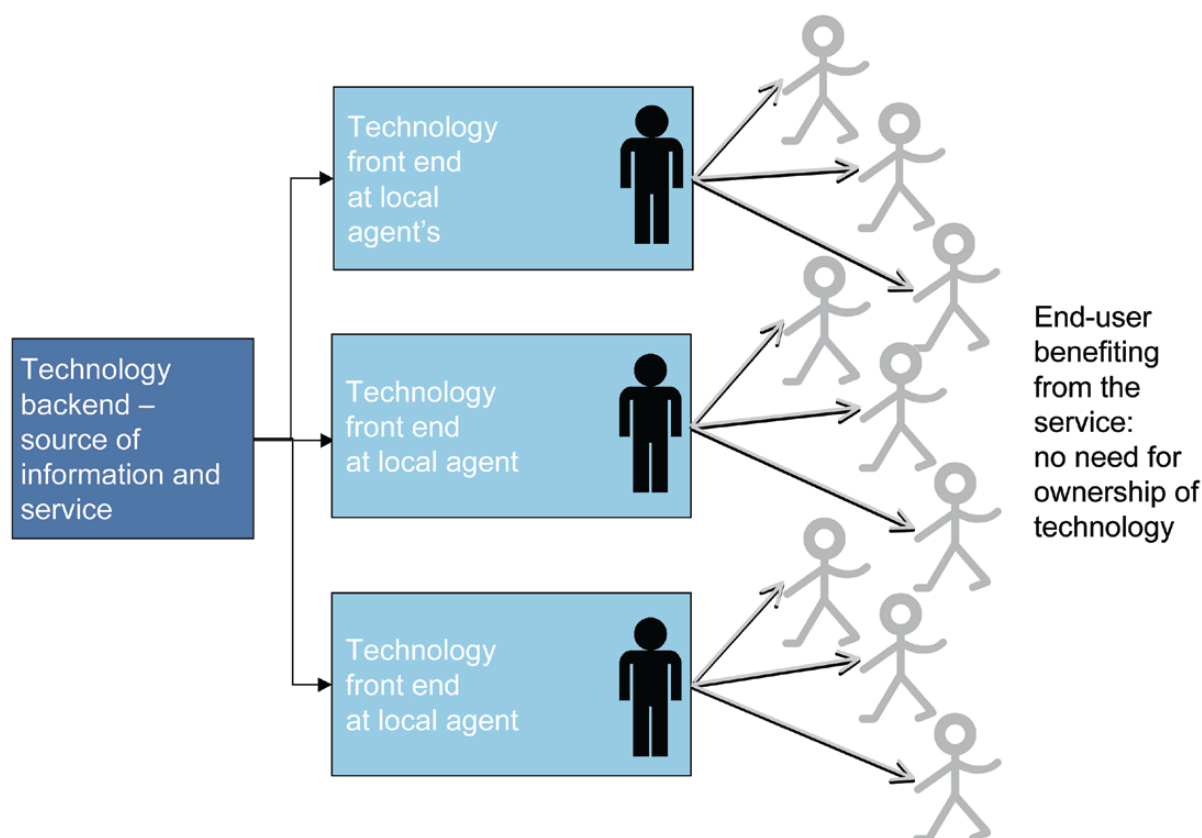
Typically, local agents will be trusted local leaders, whose credibility with the community enables the introduction of new technologies and services into the community. Alternatively the trust can be ensured by a brand (as opposed to an individual) in branches with several employees, not dependent on any one individual from the locality.

By including human agents in the delivery of ICT services, such services can be more sophisticated and tailor-made than those that are directly accessed by end-users who will be limited by their own capacity to use the system. The technology platform and ICT service itself will similarly often be more complex than in the case of directly accessed services. For example, all the cases seen here use computers rather than (or in addition to) mobile phones, and provide personally tailored information to their users.

The local agent model can then be used in any sector of activity where the service provided is sufficiently valued by end-users to justify the costs of creating and maintaining the agent network. The case studies from India featured in this chapter show that a local agent model can be useful in all four of the key sectors of this study, namely

health, education, agriculture and financial services.[49] In health, Narayana Hrudayalaya Hospital (NHH), specialized notably in cardiac care, has set up more than 800 telemedicine points in Asia and Africa since 2002 (at general practitioners' and health centers' locations), where local patients can receive direct advice through technology from first class cardiac doctors located at NHH main campus in Bangalore, Karnataka. NHH doctors review remotely 250 electrocardiograms (ECG) daily (250,000 such remote diagnoses have been performed to date), and provide one-to-one tele-consultations primarily for cardiac issues (60,000 to date). Starting in 2000, Drishtee has developed a network of 2,000 rural IT kiosks run by local entrepreneurs, providing computer training and other education modules, and more recently distribution and banking services. Started the same year by a large Indian conglomerate, ITC, to lower transaction costs and improve the quality of agro-commodity sourcing, eChoupal developed 6,500 computer agro-kiosks operated by Sanchalaks (trusted local farmers) to offer farmers local market prices, agro-advice and other agro-related services that also benefit ITC's agro-sourcing process. Last, as of 2009, the new initiative eKutir has started entrepreneur-led rural hubs equipped with at least

---

[49] This model is also used to provide government services, matrimonial match making services, and many other services that users are ready to pay for. In other areas than ICT such as water and energy, similar shared systems run by one entrepreneur exist as well, for example water-purifying kiosks run by a local entrepreneur such as Sarvajal or rented solar power stations such as those designed by Schneider Electrics for India as well.

a laptop and mobile phones, providing appropriate tailored knowledge on prices and crop growth best practices, transaction capability (aggregating, buying inputs and selling outputs) and risk mitigation (through finance and advice on pest and disease).

5.1 Local agents provide more than information: services that require a trusted intermediary

The local agent model started around the year 2000 with the internet boom, as a means for delivery of valuable services for which people previously had to travel long distances.

5.1.1 Remote consultations

Telemedicine is an example of such a valuable service linking locals to remote experts. Interestingly, telemedicine is more developed in emerging countries where it brings a previously unavailable, life saving service, than in the developed world where most people are within rapid reach of quality health facilities. The largest telemedicine network in the world is that of NHH based in India, which uses two different technologies. Transtelephonic ElectroCardiogram (ECG) allows any of the over 320 remote general practitioners equipped with the ECG device to send patient data through phone lines directly to NHH, where cardiologists send back their diagnosis within 5 minutes. NHH is also linked via teleconference facilities to more than 400 locations worldwide, where patients can interact remotely with NHH doctors. The value for the service is clear enough for patients: though they will still need to go to the hospital if they require an operation, many patients save days of travel as they are able to get expert diagnosis at their local health center, which in 80% of the cases will not reveal any heart abnormality. The 20% cases requiring further treatment might never have known it without the use of telemedicine, due to hesitation to risk days of income for a simple check-up.

Other initiatives are setting up similar systems for providing primary, chronic, and maternal care, such as Healthpoint Services' rural clinics.[50] The Healthpoint Services clinics, or EHP (for Electronic HealthPoint) are staffed by local clinical assistants (lay health workers, with one year or two of health training), diagnostic technicians, pharmacists, and clean water technicians. Patients to the local EHPs can benefit from telemedicine consultations,

> *Creating trust with the final end-user is a lot more challenging that most people think. You need to give projects enough time to build the necessary relationships."*
>
> Andrew Baird, RTI Senior Economic Growth Specialist

facilitated by the clinical assistants, with urban physicians on the other end of the technology. Quality and affordable clean water, diagnostic exams and medicines are also available in this fee-for-service model. By charging $0.80 for a consultation with a non-specialist and approximately $1.00 for a diagnostic test, on average patients spend roughly $2.25 per visit to a Healthpoint clinic, for their needed health-related services. Between October 2010 and March 2011, 8 Healthpoint clinics have provided over 20,000 tele-consultations, showing that people are ready to trust – and pay for – healthcare that leverages robust technologies.

5.1.2 Diversification of services possibly beyond ICT, leveraging agent network

In the agro-sector, eChoupal started a few years earlier than NHH with ICT kiosks for e-agro information such as crop price at the local "mandis" (government markets). At the time, in 2000, this was a very relevant service for farmers who had no other means to access such information and often spent more than a full day travelling to the market, without knowing what prices they would get for their produce. Today, as mobile phone use spreads, the need for such 'local but general' information is increasingly filled by direct mobile services, such as RML delivering agro-SMS on prices and weather information. Some of eChoupal's Sanchalaks themselves have subscribed to this service.[51] Additionally about half of eChoupal beneficiaries call their Sanchalaks rather than walking to the agro-kiosk to get crop prices.[52]

As the eChoupal example demonstrates, today local agents need to provide more than simply general information (increasingly accessible via mobile phones) to offer their clients relevant services. Since local agents are typically chosen among trusted community leaders, they can be a good entry point for new services in the community, deepening their reach and impact compared to the limited services that end-users would access directly. Additionally, they represent a physical infrastructure that can be leveraged for non-ICT purposes. Models seen here offer either a deep level of service in one area, personalizing – and thus adding value to – the services delivered (as in the case for NHH telemedicine described above or eKutir below) or a wide range of services, often increased over time and not necessarily ICT-based, as a one stop shop (as explained above for Healthpoint Services, and below for eChoupal and Drishtee). In each case they leverage the trust established in the community.

---

[50] For more information, see www.ehealthpoint.com and case study on RML p.64
[51] See part on "value-added information directly accessed by end-user" p.28
[52] As seen in field visit in villages close to Wharda, Maharashtra, in February 2011

ASHOKA FULL ECONOMIC CITIZENSHIP

A story from the field on the life and impact of an eChoupal local agent in India

Prashant Wanzajari in his Sanchalak office close to Wharda, Maharashtra

Prashant Wanzajari is a farmer, and since 2006 he is also a Sanchalak for eChoupal (trusted local agent providing information to his co-vilagers through ITC system). It all started when Prashant was connected with ITC through a village meeting organized by eChoupal, explaining the eChoupal concept and Sanchalak recruitment. Other villagers vouched for him to become their Sanchalak. Prashant was very happy when he was elected as it meant that he would be equipped with the latest technology to spread information among farmers.

Initially ITC trained him to use the technology, yet as he has not had time to practice, he regrets his typing is still slow. He and his wife are the only adults accessing the computer, but he also lets the kids play on it; in particular they like paintbrush and drawing cartoons.

Prashant's Sanchalak role requires only 1 to 2 hours per day of his time, and he still spends 10 hours per day farming. Around 25 people consult him every day, mainly on market prices when the time has come for them to sell their products. Now that cell phones are more widely available, half of the people call him for the information rather than coming physically to the Sanchalak office. Prashant has also sold 150 insurance plans in the four villages that he serves, and attributes his success partly to the trust that his fellow farmers have in him.

As an additional service, Prashant would like to get international news about commodities, in order to better predict price changes. For example, last year the supply of cotton was low as the two main producers Australia and Brazil had a bad year. Thus prices went up. The farmers did not know about this information; if they would have known they could have demanded a higher price at the mandi!

The implementation of eChoupal has allowed Prashant to increase his income both through better prices for his produce (as he knows the mandi price each day), and through additional income from his Sanchalak activities. Today his family earns about 5 lakh rupees per year on agricultural produce ($10k, though this depends on the price of crops), 2 lakh rupees ($4k) for rental of his 3 tractors, and 50k rupees ($1k) as commissions from his Sanchalack duty, including royalties on merchandise sold by the 22 small retailers he has introduced to ITC. This has enabled him to buy additional land, growing his property from 40 acres to 75. But more than his increase in income, what he likes about eChoupal is the fact that since he became a Sanchalak, he has access to information that no one else had before. Everyone in the village consults him to get access to this information, as well as for other matters. He has gained high social value from eChoupal.

Finally his favorite moment with eChoupal is a rather unexpected one: because he spoke a little English, Prashant was chosen by ITC to represent local farmers for eChoupal at the agricultural exhibition in Mumbai in 2010 that United States' President Obama attended. Prashant mentioned that he could never have dreamed to meet President Obama, and yet he now has a proud picture with Barack in his Sanchalak office!

HYSTRA
hybrid strategies consulting

The evolution of eChoupal went through three phases. From a simple information platform in its first phase, it evolved into a platform to market products and services to aggregated farmers. Then from 2008 on, eChoupal began using its Sanchalak network to expand into other services, such as selling insurance products, which requires consumer's education (and trust in the person providing it) in rural areas with low financial literacy. Sanchalaks have also acted as the intermediaries to connect small retailers of their villages to ITC sales department and have enabled direct distribution of ITC products to these local retailers. Today about 200,000 small retailers are served directly by ITC distribution around the 6,500 eChoupal kiosks.

Similarly Drishtee began with e-services including education and e-government but quickly realized local demand was actually most important for the delivery of goods – a more frequent need that that of an e-government service. Today Drishtee has 2,000 e-kiosks and serves 13,000 small retailers in its network, reaching 10-15 million villagers. It uses rural distribution as the first step into a new area, building local retailers' trust by providing them an efficient home delivery system they never had experienced before. These retailers open the community's door to Drishtee who can then install ICT kiosks and provide additional services. Drishtee recently started to provide ICT-based banking services through this channel and offers additional non-ICT services such as health consultations by local women trained by Drishtee.

As a last example of the local agent model, eKutir has taken a different route. Its agro-services target holistically the small farmer's various unmet needs (cost-effective, convenient, transparent, one-stop shop) such as access to genuine quality and appropriate input supplies, access to best crop growth experts and expertise, and access to multiple markets. It has also chosen to deepen its services by giving farmers the opportunity to communicate one-on-one with agro-experts through the kiosk infrastructure, for example by sending pictures of their diseased crops via internet and receiving advice through the same channel. Leveraging its existing positive impact on the local farmer communities – that has resulted in building of "trust" within the community – eKutir is considering expansion into other areas of needs such as finance, health and education. Once a local agent network is viable, adding valuable services to it can only benefit the three levels of the system: the local population, the local agent and the network entity itself.

> " The cost of reaching out to a village is very high while value of each transaction is low. Therefore many transactions are needed to ensure economies of scale."
>
> Satyan Mishra, Founder and CEO of Drishtee

5.2 Three business models emerge for local agent networks

The local agent model is based on leveraging technology, whether a single technology or a combination, for the benefit of several users, resulting in a limited investment cost per user. However, financing the high upfront investment cost per agent or location, in addition to the cost of setting up a locally relevant service as in the "direct access" model, remains a challenge. Cost per unit is between $800-$45,000 depending on the technology and model used.[53]

Three main business models emerge solving the challenge of this dual initial investment needed both at the central level to develop relevant service, and at the agent level to set up a new location.

5.2.1 Equity investment borne by central structure

For international entrepreneurs such as Healthpoint's Al Hammond, the "simplest" possibility of raising a large amount of capital to invest in an owned network has shown to work. Heatlhpoint Services health clinics cost roughly $45,000 each. Including all costs, the first seven units, each with telemedicine services, a pharmacy, diagnostics and a water purification plant, plus staff, required a first round of equity investment of $1million for a year of operations. Today, the clinics in India are cash flow positive and financially sustainable.

5.2.2 Franchised network of entrepreneurs providing several services and bearing part of investment costs

Drishtee and eKutir have both chosen to franchise their models to their local entrepreneurs. Entrepreneurs pay part or all of the initial infrastructure costs, often with the help of family loans or other informal financing mechanisms. Around $1,000 in both cases buys them the Drishtee or eKutir license, a computer, and other necessary tools such as a mobile phone or a printer (the exact amount depending on each kiosk's equipment choice). Drishtee and eKutir provide them with training, support and the central infrastructure for the corresponding services. Both projects provide a wide range of personalized services that ensure enough transactions for the kiosks to be viable. As stated by Satyan Mishra, Founder and CEO of Drishtee: "The cost of reaching out to a village is very high while value of each transaction is low. Therefore many transactions are needed to ensure economies of scale."

---

[53] $800 is the cost of technology in the case of eKutir and Drishtee, to which there is an added cost for franchise license of around $200 in both cases. $45,000 is roughly the cost of a Healthpoint Services clinic, including the building, management, IT, power, the hiring and management of doctors, training of local staff, and maintenance. This cost is expected to drop over time as technology becomes more mature and experience reduces the time needed –and thus the cost – to set up new clinics.

ASHOKA FULL ECONOMIC CITIZENSHIP

Drishtee and eKutir kiosks get revenues in varied forms: eKutir charges a one-time membership fee, and both charge fees for service (for agro-advice for eKutir clients, or for IT education for Drishtee clients) as well as transaction fees to either suppliers or buyers (for sourcing of fertilizers and bulk sales of produce for eKutir clients, or for order and purchase of any products for Drishtee). Revenues are shared with the franchisor. In both cases, though initial financing appears to be a challenge for entrepreneurs, those who find the necessary amount break even in less than a year, and end up earning up to several times more than in their previous job. Drishtee as a platform broke even for e-services in 5 years; its new model including distribution services is expected to break even in 4 years. For eKutir, the village kiosk recovers its own cost within 6-8 months of operation; overall breakeven at the central level will take a few years as eKutir is still in an investment phase to develop new services and expand into new markets.

5.2.3 Sponsorship of infrastructure and service by large company gaining from improved processes

eChoupal and NHH bear the setup costs of their decentralized agent network as internal investments, and recoup at least part of these costs through the cost savings that ICT brings to their core business (and in the case of eChoupal, through the additional sales made via what has become a rural distribution channel).

eChoupal was initiated by the Agri Business Division (ABD) of ITC in 2000 to provide agricultural information for farmers and a direct sourcing channel from farmers to ITC. Over the course of 6 years, ITC invested several million dollars in setting up its 6,500 kiosks, and provided the service to farmers for free. Yet each kiosk broke even in about a year, as ITC recouped its investment through improved quality of products sourced and lowered agro-sourcing transaction costs. Later on, eChoupal leveraged the trusted network of Sanchalaks that it had created to offer additional services to the villages. Sanchalaks earn a commission on these new services – in essence a royalty on each product sold to the retail points they have put in touch with ITC as well as commission on financial services that they offer to farmers. With this new version of eChoupal, farmers have increased their productivity and income with better agro-information and benefit from previously unavailable services, Sanchalaks have a new source of revenues, and ITC eChoupal has a new distribution channel to reach previously underserved customers, generating millions of dollars of additional revenues.

The business model for telemedicine is different. NHH provides both telemedicine consultation and trans-telephonic electrocardiogram diagnostics free of cost to general practitioners, who in turn pledge to offer it for free to low-income patients. It allows a low-cost remote expert screening of patients, in turn helping the NHH insurance scheme's viability despite low premium (less than \$3/year to cover 1,700 surgeries).[54] Indeed only those who appear sick in the free remote consultation will go to NHH main campus for a more complete check-up, whose costs will be covered by the insurance. Without telemedicine, such a system would not be viable.

Customer life cycle / End-user experience in local agent business model

Discover >>	Join >>	Get started >>	Evolve >>	Evangelize
1) Start by serving local retailers with distribution services, to build trust of brand (D) 1) Organize local workshop to advertize venture and recruit local entrepreneur (D, eC, eK)	1) Advocacy by entrepreneur chosen among opinion leaders (eC, eK, D) 2) Low cost of service provided compared to alternatives 3) Membership fee ("privilege" feeling) (eK) 4) No registration necessary (NHH, eC, C) 5) Free service (NHH, eC)	Simplified end-user experience: No need to interact directly with the technology	Deeper or wider range of services offered, tending to range of clients' needs (eK, eC, D)	Loyalty points for recurring use, offering discounts on other services (eK, eC)

Note: D stands for Drishtee, eC for eChoupal, eK for eKutir and NHH for Narayana Hrudayalaya Hospital in the above table.

[54] Yeshasvini is the most used insurance scheme at NHH. It only accepts members who come as a group of people organized together for a reason other than healthcare (e.g. economic reasons, for example self-help groups), and only until 75 year old. This grouped membership avoids adverse selection and makes sure enough patients are enrolled in the scheme to keep it viable. See NHH case study p.103 for more details

HYSTRA
hybrid strategies consulting

5.3 High capex for each agent, the need for partnerships and for efficient agent recruitment limits scale; while replication only works in areas with high population density

5.3.1 High capex per unit and challenge of financing agents can slow down scale-up

As described above, one of the challenges of the local agent model is the high cost of scale-up in terms of launching new units, if all are to be borne by the central business structure. Only large players like ITC, NHH, or Healthpoint Services are able to invest in setting up this network. The other option of franchising the system to local entrepreneurs – the local agents – has the drawback that these agents often struggle to raise funds as loans remain difficult to access for rural populations. The amounts required are part of the "missing middle" in banking, too small to service for traditional banks and too large for MFIs. In addition, local agents rarely have collaterals or written pay-slips to prove their solvability. Finally in India taking on debts is not well regarded socially, adding to local agents' difficulties in obtaining a loan. Entrepreneurial ventures such as Drishtee and eKutir thus face difficulties in raising two types of capital: funds for the headquarters, notably to develop new services on the central platform, that will typically be recovered within a few years; and small loans for local agents to get started, recouped in less than a year. Both eKutir and Drishtee are working on these challenges, with ideas such as a revolving fund to finance these entrepreneurs, or pooling them together to get a one-time joint loan instead of separate smaller ones.

5.3.2 Partnerships are necessary to provide enough services for viability

The more services provided through a local agent's infrastructure, the more revenues the business will generate, without additional technology costs. Yet providing services in various areas requires sufficient funds to develop a range of services in-house, or the

" Most of the time, there is an indirect dialogue between farmers and ICT-based eKutir service providers, with the village entrepreneur acting as the trusted local interface. There are two key aspects of the eKutir service: the ICT application at the back-end, that connects transparently and cost-efficiently the disparate stakeholders of the agriculture ecosystem; and the social entrepreneur, who has the local understanding and relationships with the farmer community and can customize the service. This architecture reduces the burden on the illiterate farmer, leaving the entrepreneur to translate and deliver the benefits of expertise and goods from remote agro-system players to farmers."

Srinivas Garudachar, Director of Grameen-Intel Social Business and Advisor of eKutir

ability to set up partnerships with relevant product and service providers. This has shown to take time even for an established brand such as ITC, which still hopes to find more "like-minded partners" to provide more value added services through its eChoupal network, and is also the one wish of newer ventures such as eKutir. Yet this approach has proved rewarding as both eChoupal and Drishtee demonstrate by their sheer scale today.

5.3.3 Recruiting skilled and locally trusted workforce is a challenge

eChoupal, Drishtee and eKutir have similar approaches to selecting and training entrepreneurs. As trust is the key factor to their success in villages, they make sure to choose trusted leaders by having villages vouch for future local agents, either through vote or one-on-one interviews, among candidates who have some degree of literacy (ranging from completing only primary school to college). The selection process is completed with training, on both the business and technology sides. The challenge is not so much to find the right person as to have sufficient resources for a lengthy selection and training process. To overcome this requirement, eKutir places "potential future agents" in traineeship at existing agents' kiosks for six months to two years, growing a pool of future franchisees who will be already attuned to the business when they start their own eKutir kiosk.

5.3.4 One local agent can reach a breakeven number of people only in dense enough areas

eChoupal and Drishtee, each serving several million people both with e-services and product distribution, have shown that local agent networks can scale. Yet both models have spread in the specific context of India where rural areas have high population density, one kiosk serving several hundred people (a breakeven number of customers) within a 5km radius. One of the main limitations to replication is this density, which cannot be found in all countries. An interesting alternative to a fixed kiosk is that taken by CKW in Uganda[55] or by FINO in India[56] where local agents are actually mobile in the community and spend several hours a day visiting people to provide them with ICT-based services.

[55] See "Crowdsourcing" section p.112 and case study p.118
[56] See "Financial Services" section p.138 and case study p.155

ASHOKA FULL ECONOMIC CITIZENSHIP

Challenging steps in the value chain of local agent model

Value chain	Challenges	Solutions
R&D / service design	• Find valued service as entry point	• Conduct pilots to adjust services to demand
Software and hardware sourcing or design	• Grow internal capacity and / or resources to make the right technology choice • Bear high initial capital expenditures to purchase technology	• Use existing cloud servers in pay-as-you-go model or partner with technology experts to develop in-house application • Set up franchise where franchisees bear part of hardware cost
Local agent selection and training	• **Find people with both local trust and skills** • **Train agents at acceptable costs**	• Conduct local interviews, have village vote for their future entrepreneur • Place candidates in traineeship at agents'
Agent finance	• **Find financing solutions available to local entrepreneurs (often unbankable)**	• Provide hardware for free, with payback provided to central entity by improved efficiency or service fees • Set up revolving fund
Initial Marketing	• Create trust • Elicit willingness to pay	• Provide service for free until benefits are tangible • Provide local agent with marketing support
Customer relationship	• Keep client active	• Set up loyalty scheme • Choose agent location where clients go for other reasons (existing businesses, etc)
Maintenance		

▢ Challenging step in initial stages
▪ Challenging step to scale

The local agent model successfully overcomes the literacy barrier as well as the lack of connectivity of the poorest to provide ICT-enabled services.

As these two barriers are fading away, local agents need to bring more value to their customers than what a mobile phone can offer. This means both updating the technology used and entering into partnerships either to deepen the level of service offered in one sector, for example providing agro-expert remote consultation rather than simply market prices, or to widen the scope of services offered, for instance by adding remote telemedicine consultations to agro-expert services. The cases seen here are already providing a wide range of services well beyond their initial offer. Going one step further, local agents can be leveraged to transform the process of information access into one of information sharing – using ICT to provide two-way services is the principle of crowdsourcing, that will be described in the next chapter.

Case study list

Logo	Name	Sector(s)	Page
DRISHTEE Sustainable Communities	Drishtee	Education, Supply chain	p.80
ई-चौपाल किसानों के हित में, किसानों का अपना	eChoupal	Agriculture, Supply chain	p.88
eKutir	eKutir	Agriculture, Financial services	p.95
NARAYANA HRUDAYALAYA INSTITUTE OF CARDIAC SCIENCE CARING WITH COMPASSION	Narayana Hrudayalaya Hospital	Health	p.103

Drishtee
www.drishtee.com

Using ICT to provide key web-based services and distribute FMCGs in rural India

Executive Summary:

▪ **Organization:** Drishtee is a for-profit organization founded by Shailesh Thakur, Nitin Gachhayat and Satyan Mishra to enable the emergence of a rural network of franchises and partnerships capable of providing access to basic services and goods to the rural population of India. Drishtee is based out of Uttar Pradesh.

▪ **Project:** Drishtee provides access to web-based services through a network of 2,000 village kiosks. In addition, Drishtee distributes Fast Moving Consumer Goods (FMCGs) to 13,000 rural shops, the Drishtee Rural Retail Points (DRRPs), which reach out to 10 to 15 million villagers of 8 principal Districts of Assam, Bihar and Uttar Pradesh.

▪ **Innovation:** Drishtee's uniqueness lies in its original use of ICT to foster development in remote communities by combining access to ICT-based services and the physical availability of essential goods. In each District, Drishtee identifies "milkman routes" that connect 20 to 25 villages. It then establishes "rural routes" with kiosks at the nodes that support the development of an ecosystem of micro-enterprises in the route villages, for both services and products: while the kiosks cater to the needs of villagers through web-based services, the DRRPs are physical product retail points. District hubs also host some ICT-enabled services, essential to the physical supply-chain management of the network (such as call centers and remote inventory management services).

▪ **Sustainability:** Drishtee's experience demonstrated that its model could break even in 5 years (2001-2006). Considering that over its initial years of existence, Drishtee's model has evolved considerably from a pure kiosks model to the current hybrid model (kiosks/supply chain), it is possible that replication of the more accomplished current model reaches breakeven point in less than 4 years. Scalability is embedded in Drishtee's model via the "milkman route" approach. Once a route is made economically viable, additional services that have a positive social impact can efficiently leverage the established infrastructure. Launch of additional routes becomes then the main lever for scaling-up. Replicability appears more complex, as success factors such as demographic density, or availability of rural skilled workforce may not exist equally in all contexts.

Drishtee retail point

Project current status

- **Date of creation:** 2000
  - Drishtee 1.0 (2000): Focus on e-Govenment (Gyandoot Project)
  - Drishtee 2.0 (2003-2008): Focus on ICT based village kiosks (up to 1.5k)
  - Drishtee 3.0 (2009 to date): Focus on Physical Supply Chain (number of kiosks decrease to 1k before going back up to 2k in 2010), use of kiosks as "milkman routes" hubs

- **Services delivered:**
  - Direct delivery service to rural India for multiple goods (e.g., eyeglasses, batteries, mobile phones, FMCG products)
  - Lower cost, efficient and time saving access to various services e.g. insurance, education (ICT training), e-commerce, health, agri-services, m-banking services, regional job posting or matrimonial services for rural villagers
  - Supply chain management system to meet the DRRPs needs: support by call centers for orders booking (hosted in the kiosks and staffed with trained villagers), Point of Sale (POS) printers to record transaction and print receipt

- **Benefits to users:**
  - *For villagers:* Lower cost of access to goods (eliminating intermediation) and access to previously unavailable services
  - *For rural entrepreneurs:* Employment opportunities (especially for previously unemployed women), cost effective channel to sell their services and products

- **Customers:** Rural India:
  - *Initial focus:* Landed farmers, with target of capturing 5% of a 40k$ per village service market
  - *Current reach:* Catering to almost all villagers for product delivery, and 15% of average village population for kiosk services, with estimated 10-15m client villagers in 3 Indian States (Uttar Pradesh, Bihar and Assam)

- **Competitive landscape:**
  - *Substitution before project:* Need to travel 20/30 km to reach traditional networks. Costs commonly 50% more expensive in rural areas than in urban ones
  - *Competition:* Unilever, other Indian FMCG manufacturers struggling with rural distribution
  - *Similar rural kiosks models:* None with similarly wide range of products and services. On rural distribution: eChoupal developing routes directly serving small retailers as advised by their local entrepreneurs ("Sanchalak")

- **Partners involved:**
  - *Social business support organizations:* Ashoka, Acumen Fund, Drishtee Foundation, IFC
  - *Global ICT firms:* Microsoft, Intel, Motorola, Nokia
  - *Suppliers of goods and services:* Scojo Eye Ware, Bajaj Insurance, Pustak Mahal Books, Amaron Batteries, SBI (State Bank of India) for Rural Banking, Colgate and Novartis for health care, IGNOU (National Open University) for Education and Nestle/Danone for FMCG products
  - *Local e-services providers:* Cyber info-Dev (e-Gvt), India Times, Janan Swasth Kendra (Health Care), quick info service (computer education, English, e-commerce)

- **Technology aspects:** Off-the shelf web connectivity and technology
  - *At central level:* Call centers management system as well as supply chain management systems (remotely controlled): Central MIS working as Enterprise Resource Planning which records transactional data and generates financial and other decision support system data
  - *At hub level:* Business Process Outsourcing (BPO)/Call centers including computer with broadband internet access for order booking
  - *At kiosk and DRRP level:* Computer with broadband internet access (with fingerprint scanner for banking services) for kiosk owners, mobile phone for DRRPs
  - *Training needed for local partners:* ICT and management for kiosk owners, micro entrepreneurs, as well as customers for web-based services such as e-commerce
  - *Data security management:* In-house application developed in 2003 and scaled up since. Server maintaining adequate security
  - *Maintenance:* In-house team of 4 IT team members who manage the applications and develop enhancements

- **Business design:**
  - *Staff recruitment process and capacity building:* In each new location:
    1) map new routes and start delivering products to DRRPs;
    2) once local trust is built, ask DRRPs to introduce Drishtee staff to villagers;
    3) discussion with villagers to gather recommendations on local entrepreneurs, with specific focus on women (different entrepreneur for each type of service, i.e. one for education, one for financial service, etc., to ensure sustained focus);
    4) selection of entrepreneur and training. Since it is difficult work with little short-term benefits, only few with long-term vision dare to try
  - *Marketing:* Support to integration of each franchisee and micro-enterprise in its eco-system
    - *Community needs assessment:* Done by Drishtee Foundation Research, showing that not all rural population basic needs can be satisfied via ICT and that many basic needs are dependent on the availability of essential goods. This led to re-focusing Drishtee on physical supply chain
    - *Service customization:* Example: More than 20 course contents developed by Drishtee based on local inputs
    - *Awareness campaigns and service promotion:* Drishtee follows a plan of Operation Chetna (Awareness) for awareness generation, and also organizes camps for promoting partner products and general sensitization in health and other issues
    - *Customer feedback loop:* Through call centers and field visits
    - *Trust:* Built through engagement with community. All transactions recorded with printed receipts. Quality certification ISO 9001:2008
  - *Distribution:* 1k kiosks, 13k DRRPs
  - *Pricing:* Opportunity cost model for pricing of own services, but in most cases pre-fixed prices by service providers/product manufacturers
  - *Cost and revenue model:*
    - *Costs:* Overheads and all infrastructure/operations till district level, including supply chain, borne by Drishtee. Village level infrastructure cost borne by kiosk
    - *Revenues from kiosks:*
      - One time license fee at time of operationalization ($70-200)
      - Transaction fee from services providers (Insurance, Education, Health): 5-25% of service price
    - *Revenues from DRRPs:* Commission charged to suppliers: 5.5%
    - *Payment:* End-user payment in cash. Incipient retail M-Banking. Some MFI involvement at kiosks and DRRPs level (Drishtee lends to small businesses at the village level through some of its trusted kiosks)

- **Regulatory aspects:** Not much regulation regarding distribution in India

- **Monitoring and impact measurement:** Some monitoring performed by Drishtee Foundation on social impact. Impact assessments carried out by partner organizations such as Dalberg for IFC

- **Awards:**
  - 2010: Ashoka Changemakers Award, Clinton Global Initiative Invitee
  - 2008: Clinton Global Initiative Invitee
  - 2007: World Economic Forum "Technology Pioneers"
  - 2006: Red Herring "100 Asia Award", ZDNet "Technopreneur of the Year Award", Deloitte "Winner of Fastest growing Company"
  - 2005: Schwab Foundation "Social Entrepreneur of the Year Award", Ashoka Fellowship for Social Entrepreneurship
  - 2003: World Bank "Development Market Place Award"
  - 2002: Digital Partners "Most Promising Social Enterprise Award"
  - 2001: World Bank Infodev's "Best ICT Stories"
  - 2000: Stockholm Challenge Award

- **Future plans and next steps:**
  - Further focus on physical supply chain: expansion to more Routes, Districts and States in India: in 2012, development of product portfolio for DRRPs, with goal for distribution to reach 70% of Drishtee revenues (versus 30% today)
  - Development of services portfolio in kiosks (namely those with employment opportunities, e.g., call centers)
  - Development of M-banking for micro-entreprises and end-user payments
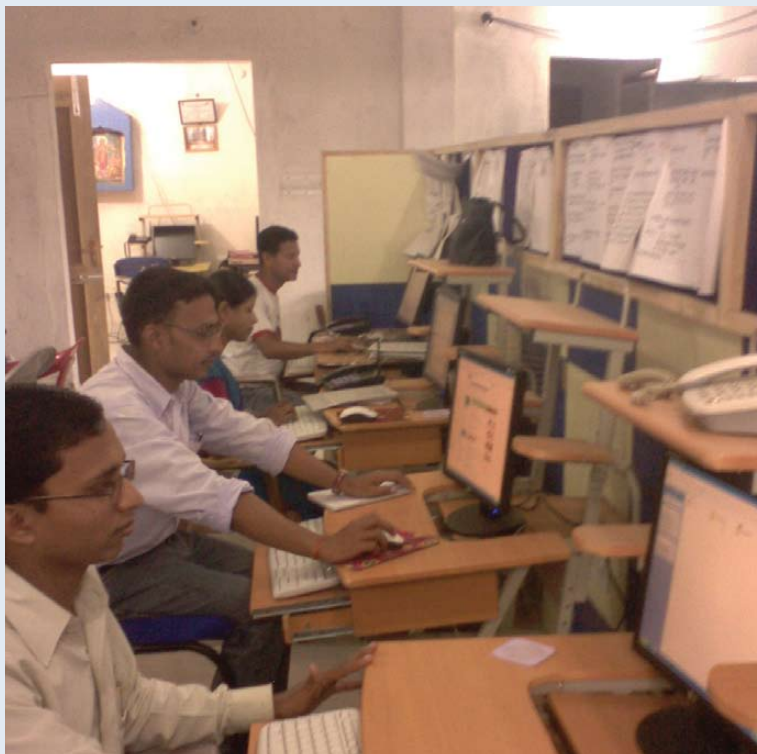
Drishtee BPO

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** Difficulty accessing essential goods in rural India (70% of population). More than 50% of rural population would have to travel an average 20 to 30 km to reach reasonably supplied distribution outlets. Digital divide affecting rural India and rural entrepreneurs

- **Solution provided:**
  - *Tool quality:* Diverse and customized ICT-based services relying on off-the-shelf, proven technology at kiosks level
  - *Service comprehensiveness:* Catering to many different needs of rural population: Full-fledged physical supply chain management system, physical delivery supported by call centers for orders booking (hosted in kiosks and staffed by trained villagers), M-Banking services, POS printers to record transaction and print receipts via GPS

- **Scale and reach:**
  - 2k kiosks, 13k DRRPs, 14 hubs (including 8 doing FMCG) in 8 principal districts of Assam, Bihar, Uttar Pradesh
  - 25 routes in each District, 20 Villages per route
  - 10m to 15m villagers reached
  - *Growth:*
    - 4.2k kiosks in 2007 down to 1k in 2009, back to 2k in 2010 once refocused on distribution and financial services
    - Distribution launched in 2007: 45% of turnover FY 2011

- **Acceptance and usage:**
  - *Acceptability:* Proved by 15% of an average village population using kiosk services. Encouraged by choice of local entrepreneur to run Drishtee operations
  - *Usability:* Facilitated by the absence of need to use technology for villagers

- **Socio-economic impact:**
  - 10 to 15m villagers with access to lower cost, faster supply chain and services
  - Job creation (nearly 5k jobs), especially for women

- **Environmental impact:** Not mentioned

2/ ECONOMICALLY SUSTAINABLE?

- **At villager level:**
  - *Initial cost:* None (no need for technology)
  - *Direct cost of FMCG and food through Drishtee:* Target: $5/mth out of 32$ of monthly FMCG and food expense (Rs 250 out of 1.6k)
  - *Direct cost of services per household through Drishtee:* Target: $5/mth (40% on health, 40% on education, 20% on debt servicing) out of 28$ of monthly service expense (Rs 250 out of 1.4k)
  - *Cost of best alternative:* 50% more expensive than Drishtee (often requiring travel of 20-30 km)
  - *Average household income:* $60/mth (Rs 3k)
  - *New income opportunity:* Directly generated by Drishtee: Employment at village hub and micro enterprises level

- **At village kiosk level:**
  - *Kiosk set up cost:* $1.1k (Rs 55k, including license fee Rs 5k)
  - *Kiosk revenue:* $120/month (often 50% more than previous job)
  - *Kiosk net profit:* $40/month (taking $40 out of profit for entrepreneur's salary)
  - *Breakeven:* 12 months

- **At district hub level:**
  - *Employees:* 14/hub, including 3 for BPO
  - *Employees' salaries:* 20-25% increase compared to previous job
  - *Hub turnover:* $18k/mth
  - *Hub net profit:* $300/mth
  - *Breakeven:* 18-24 months

- **At Drishtee overall level:**
  - *Revenue FY 2011:* $1.6m (Rs 80m)
  - *Cost recovery:* Breakeven reached in 5 years (2006) for ICT services. Profit reinvested in 2007-2009 with additional investment. Breakeven for new business model in 2011
  - *Initial funding:* Seed capital and promoter contribution
  - *Ongoing funding:* Income from project

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Once route economically viable, addition of other services with positive impact to piggyback on established infrastructure
  - Identification and launch of additional routes to scale up to new locations
  - Availability of a core group of skilled to-be micro-entrepreneurs capable of running the kiosks and micro enterprises
  - Existence of additional accountable suppliers and supply chain administrators

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Growth capital, FMCG partners and banks for on-lending
  - Availability of "milkman routes" reaching threshold of demographic density
  - Availability of rural skilled workforce
  - Favorable political or regulatory environment as far as FMCG distribution is concerned
  - Sufficient infrastructure for broadband connectivity

Drishtee training center

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF THE ENTREPRENEUR

INTERVIEW WITH SATYAN MISHRA, FOUNDER AND MANAGING DIRECTOR

Satyan, an Ashoka fellow, is an MBA in International Business from Delhi School of Economics with 12 years of entrepreneurial experience.

Born to a middle-class family of Bihar, Satyan Mishra has always had a strong bond with his ancestral village in Madhubani. The rural poverty Satyan saw around him in his childhood had a strong influence on his thinking today.

While Satyan was in college in Delhi, a computer-related job sparked his interest in the Internet's capacity to benefit rural Indians. When he was invited to be part of a Madhya Pradesh State Government e-governance project in 1999 he seized the opportunity.

The Gyandoot project, started in 1999, used salaried state government to provide government information through information kiosks. Satyan noticed that the employees did not do enough to promote the service, and villagers did not know how to use the centers. He proposed to focus on trained rural entrepreneurs to run the kiosks. As locals, these entrepreneurs could better connect with the villagers and would be more likely to promote the kiosks rather than letting them languish.

The idea seemed to work, and soon more than 300 kiosks were operating throughout the country. The Gyandoot model won the Stockholm IT Challenge Award of 2000, and in 2003, Satyan's Drishtee model won the Development Market Place Award (World Bank).

Drishtee was incorporated in Uttar Pradesh in 2000, and from there evolved into a more comprehensive model. In 2009 Satyan realized that Physical supply-chain was also indispensable, and refocused Drishtee on both kiosks and rural supply chain, today serving more than 10m people in rural India.

Exchange rate for this case study: 1 USD=50 INR

"Why are you doing all this?
The vision of Drishtee is a world where all communities are empowered to achieve shared prosperity. To achieve this, our mission is to collaborate with marginalized communities to develop and nurture rural enterprises and support the community ecosystem.

▪ Why has your model not taken up the world yet?
It's really a bottom-up model, adapted to local specificities. Drishtee as an organization may be limited in its spread, it cannot be copied straight, yet the core concept can be replicated. We have already seen that in India the model could spread across states (whereas India itself is the home of many heterogeneous communities!), and our model is being replicated currently statewide in Rwanda.

▪ What are the 3 key challenges you have faced while trying to scale up?
*1) Growth Capital at 3 levels: market-based loan for the entrepreneur, loan and equity for the hub, and Drishtee requires equity
2) Migration of rural workforce
3) Attitude of outside rural stakeholders*

▪ What is the one regulation that would help your project grow?
Free flow of capital between Drishtee and our entrepreneurs. So far the entrepreneur is a separate entity that needs to get his loan approved from banks, and it is hard for him as he is "unbankable" (without collateral or track record). If we could find a way for Drishtee to be authorized to do credit for its entrepreneurs, it would really simplify the task for us.

▪ What is the top one wish you would have that would help your project grow?
After we get access to capital for our entrepreneurs, we would need investment capital to grow!"

Sources:

Interviews with Satyan Mishra, Founder, in December 2010 and January 2011 and meeting on March 1st, 2011

Drishtee Website: www.drishtee.com

Drishtee brochure, available at www.drishtee.com/images/Drishtee_Brochure.pdf

http://www.ashoka.org/fellow/2623

http://www.drishteefoundation.org/

http://www.acumenfund.org/investment/drishtee.html

http://www.drishteehaat.com/

Summary Report (Final) on Model Village – CAN Project – Thawar, Lucknow (India), Halloran Philantropies and Drishtee Foundation, 22th April, 2010

Contact person for the project:
Mishra Satyan, Founder: satyan@drishtee.com

Improving agro sourcing and bringing services to small farmers' in India through farmer-run internet kiosks

Executive Summary:

▪ **Organization:** ITC ltd. is one of India's leading private companies active in various sectors (cigarettes, hotels, paperboards, packaging, agri-business, etc.), with a market capitalization of US$ 14bn and a turnover of more than US$ 5bn in 2010; its Agri Business Division (ABD) is a US$150m company focused on commodity sourcing and rural marketing services.

▪ **Project:** eChoupal was initiated by the ABD in 2000 to provide agricultural services for farmers, aiming to lower transaction costs and improve the quality of agro-commodity sourcing. The main eChoupal services comprise a transparent eChoupal purchasing channel, provision of agricultural information and agricultural product supply. 6,500 kiosks operated by Sanchalaks (trusted farmer families) benefit 4 million farmers in more than 30,000 Indian rural villages. Since 2007 the Sanchalaks act as social intermediaries in the community providing additional services both for farmers, such as insurance, and for ITC, such as retailers' recruitment and aggregation for last mile delivery of products by ITC and its partners.

▪ **Innovation:** *Technology:* State of the art when first installed, the hardware and web platform accessible to Sanchalaks have been continuously upgraded to execute new services. *Business model:* Disintermediation of transactions between farmers and ITC has been eChoupal's primary innovation and the key to its success; since 2007, eChoupal leverages its network of Sanchalaks to offer other services, not necessarily based on technology, previously not accessible in rural areas (e.g. financial services).

▪ **Sustainability:** eChoupal has shown that it can bring comprehensive services to rural people in an economically sustainable way for both Sanchalaks, who run the kiosk, and individual farmers, who benefit from the services, while bringing down the cost of sourcing commodities for ITC. A specific success story is that sub-optimal practices in the farmers' produce sales have changed following ITC disclosure of a guaranteed daily fixed price coupled with cash purchase, forcing Mandis (local markets) to increase transparency and eliminate the delay of farmers' payments. The rapid spread of mobile phone makes the information service of eChoupal less necessary in that farmers can now access market information through other channels. However, the social capital and trust that eChoupal has built in rural areas should allow it to develop additional services on the same network – ITC plans to further enhance "last-mile distribution" using technology for real time information and more efficient management of logistics. Scaling further will then require updating the technology. Replication depends on the willingness of other large companies to serve rural populations and on their capacity to rally network partners to offer a range of services through shared infrastructure.

Project current status

- **Date of creation:** 2000

- **Product/ Service delivered:**
  - eChoupal 1.0 (2000-02): Agricultural services based on direct connection between farmers and ITC for: a) ITC purchase of farmers' commodities and b) farmers' access to agricultural information (weather, market prices, scientific farm practices and risk management allowing farmers to decide when and where to sell its produce)
  - eChoupal 2.0 (2003-07): Development and implementation of eChoupal network as platform to market products and services on top of existing services (notably aggregating farmers' demand for inputs)
  - eChoupal 3.0 (since 2008): Deepening of rural relationships by developing marketing and retail of products in "Choupal Saagar" (rural supermarket retailing products corresponding specifically to farmers demand), and new services (crop loans, insurance services, facilitation of retail activities) to villagers including non-farmers

- **Benefits:**
  - *For farmers:* Access to up-to-date information for improvement of agro practices, and access to other previously unavailable services (financial, etc.) and products (fertilizers, etc.)
  - *For farmers and ITC:* Avoided intermediaries' margins for both purchase and sales, better consistency of quality and better prices

- **Customers:** 4m farmers for agro services (10m villagers through retail points)

- **Competitive landscape:**
  - *Substitution before project: For sales channel:* a) Traders working at Mandis (government-mandated marketplace; 90% of the transactions); b) Producer-run cooperative societies (10% of the transactions). No access to expert information. *For other services:* None.
  - *Competition:* Only on some activities proposed by eChoupal (for example, Drishtee for ICT services; other banks for financial services); no competitor with the whole range of services

- **Partners involved:** Over 100 partners across industry sectors:
  - *Suppliers:* Commodity and FMCG suppliers such as Colgate, fertilizer suppliers, etc., for marketing and/or distribution, selected on: 1) Long-term interest in rural market; 2) Adapted product range (i.e. corresponding to farmers' demand and complementary with ITC products) and price points
  - *Banks:* State Bank of India for crop loan (still paper based, with Sanchalaks acting as local bank agent); Life Insurance Corporation of India for insurance (still paper based, sourced by Sanchalaks)
  - *Nokia Life Tools:* Local content gathered by eChoupal for mobile agro applications
  - *Monster India:* Employment platform

- **Technology aspects:**
  - *At Sanchalak level:* Computers with Internet access, uninterrupted power supply (UPS), solar battery charger. Moved from dial-up solutions (40 kbps max) to satellite-based solutions (256 kbps)
  - *At farmer level:* Either no access to technology, or access to Sanchalak computer (at discretion of Sanchalak)
  - *Training needed:* Sanchalaks trained by ITC (on basic computer usage, functions of eChoupal website, basic business skills, quality inspection skills for crops)
  - *Data security management:* Not needed (no transaction via web, only information)
  - *Maintenance:* 1 ITC engineer for 80 eChoupal kiosks (free to Sanchalaks), visiting kiosks once a month

▪ **Business design:**
  • *Recruitment process and capacity building:* Sanchalak selected among motivated, business-oriented, and trusted farmers (determined by village interviews and votes), trained by ITC on technology and new services
  • *Marketing and customer relationship:*
    - *Marketing:* Through Sanchalaks and word of mouth, local rural media, broadcast on eChoupal radio (pre-recorded agro news that only Sanchalak can broadcast), demonstrations and free samples at haats (weekly markets in district town) for products sold through eChoupal channel
    - *Value proposition of agro-information:* eChoupal guaranteeing purchase of crops at previous day closing price, against "parchi" (voucher delivered by Sanchalak without obligation for farmer but obligation of ITC to purchase at agreed price), at eChoupal locations (outside of Mandis, avoiding costs of Mandis for weighing of crops, loading, etc.)
    - *Education and awareness: Agriculture:* Farming demonstration plots lent by farmers to be cultivated by ITC to help farmers learn on best practices. *Other:* Farmers education notably on financial services such as insurance and loans, conducted by Sanchalak
    - *Customer involvement in design:* Co-creation of user interface (ITC organized groups of farmers to determine what info they wanted to see, how the info should be displayed, etc.)
  • *Distribution:* 1 kiosk for 600 farmers within 5km radius, ~30 retailers per kiosk
  • *Pricing of seeds:* Purchase of crop at previous day's closing price if good quality (evaluated by Sanchalaks through simple tests that farmers understand and trust; laboratory tests done later, not impacting farmer's prices)
  • *Cost structure:* Technology costs borne by ITC before 2007, in expansion phase, as an investment: $3k-6k per kiosk (28% PC, 52% VSAT, 11% power, 5% printer, 4% support). All other costs also borne by ITC, except part of marketing of retail products paid by distribution partners. Maintenance costs: $100 / year
  • *Payment:* No direct payment for ICT service by farmers, only commission on transaction
  • *Sanchalak financing:* Computer and internet connection provided for free by ITC. Commission on transaction (insurance sold, products sold through retailers they recommended, etc.) as additional source of income (Sanchalaks are farmers)

▪ **Regulatory aspects:** Since 2002, organized wholesalers and retailers allowed to purchase directly from farmers if they pay Mandi taxes and fees. However, remaining restrictions on location or quantity that can be bought directly from farmers (to avoid speculation on produce withheld)

▪ **Monitoring and impact measurement:** Internal evaluations only

▪ **Awards:** UNDP, Wharton-Infosys, Development Gateway, Stockholm Challenge (2006) and India Innovation

▪ **Future plans and next steps:**
  • Expand farmers' incomes in the 30k villages reached through deepening current services and developing new ones (healthcare to reduce health-related costs, mechanized agriculture to increase productivity, education programs to increase employment opportunities)
  • Further develop rural retailing activities, possibly through new ICT means such as smart tabs or phones to follow logistics in real-time and adjust accordingly

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** Mainly subsistence agriculture in India: 23% GDP, 65% of workforce

- **Solution provided:**
  - *Tool quality:* Robust (Windows 98); problem of voltage fluctuation addressed through battery-based UPS backup and solar battery chargers; maintenance done by ITC
  - *Tool comprehensiveness:* Comprehensive agro services for farmers, additional financial and supply chain services

- **Scale and reach:**
  - *Number of kiosks:* 6.5k in 30k villages and 10 Indian states
  - *eAgro services:* 4m farmers impacted, 500k farmers (individual or cooperatives) per season, i.e. almost all farmers in targeted villages
  - *Growth:*
    - 2003: 1m farmers, 11k villages
    - 2004: 2m farmers, 20k villages, 6 new kiosks per day
    - Since 2008: 4m farmers in 30k villages. Deepening of services offered and retail expansion, rather than new kiosks
  - *Retail:* 24 Choupal Saagar, 200k retail outlets, 10m retail clients

- **Acceptance and usage:**
  - Proven by no case of theft, misappropriation, misuse
  - *Usability:* Interface for farmers in their native language (Hindi), possibility to type in Hinglish (Hindi with English characters)
  - *Farmer trust and loyalty:* Built through
    1) Sanchalaks, chosen for initial community trust and obliged by public oath to serve the community
    2) High quality of services offered
    3) Printed receipt for each transaction

- **Socio-economic impact:**
  - *For farmers:*
    - Better agricultural practices and better quality of crops (incentivized through "bonus points" given for crops with quality above the norm, exchangeable for ITC products)
    - Empowerment through technology
    - Easier access to financial services, in particular credit, based on credit history gained through Sanchalaks
  - *For villagers:* Computers used by children for schoolwork and villagers to find job opportunities
  - *On India agro-practices:* Increased transparency on purchasing process

- **Environmental impact:**
  - Not measured for eChoupal standalone
  - ITC involved in environmental projects through CSR such as Sustainable Livelihood Initiative (investments in natural resource management)
  - *Energy consumption:* Solar panels as main supply or back-up to charge ICT devices

2/ ECONOMICALLY SUSTAINABLE?

▪ **At BoP end-user level (farmers):**
  • *Initial cost:* None, no subscription fee, no need to invest in technology
  • *Average household income:* $400-1000/year
  • *Avoided costs:* Mandis, leading to increased profits (+2.5% in 2003, +10% in 2004 since 2000)
  • *New income opportunity:* Through increased productivity due to expert advice, increased farmers' choice of buyers (only 10-20% products bought by ITC) and suppliers of agro-inputs. Anecdotal evidence of farmers able to purchase agro-equipment following eChoupal implementation
  • *Ability to reach the poorest:* Within reach of very small farmers, but mostly within 10-15 km radius of city

▪ **At local organizations level (Sanchalak):**
  • *Initial costs:* None, borne by ITC
  • *Cost of providing service:* Time spent on eChoupal activity: 1-3 hours/day
  • *New income opportunity:* 0.5% commission on agro-transactions, additional commissions from new services. In total additional revenues of $200-$4000/yr through eChoupal activities, representing 5-20% of total Sanchalak income

"Choupal Sagaar", ITC rural supermarkets catering specifically to farmers' needs, where they can also sell directly their produce to ITC at guaranteed prices

- **At project level (eChoupal):**
  - *Revenues from e-services:* None, provided free of cost
  - *New revenue sources:* Through increased advertising for other products, new marketing and retail activities through eChoupal network, hundreds of $m of yearly turnover
  - *Value captured:* Through reduced transaction cost (hundreds of $m of products sourced yearly through eChoupal) and improved blends for in-house food brands (leading to market leadership: 51% market share for wheat flour brand)
  - *Funding:* No subsidy, financed internally as an investment

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Mechanism fostering trust (in this case, choice of Sanchalak among trusted people, public oath of Sanchalak to serve community, hardware given for free, ensuring quality service from the start)
  - Large range of services offered to make kiosk more profitable and have more impact
  - Robust technology that will remain relevant over time

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Legal context authorizing corporations to buy directly from farmers
  - Current local high cost of intermediation, rewarding kiosk users with immediate benefits
  - Local entity leading the project with:
    1) Strong brand to create trust
    2) Long term goal of developing rural markets, and willingness to invest in it
    3) Ability to work in partnerships and catalyze energies of other players with complementary skills to offer services not yet provided to rural populations

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF THE ENTREPRENEURS

ITC was convinced that the next wave of growth would come from the agricultural sector, especially in India where it represents over 60% of the population. In 1998, the Chairman of ITC challenged the AgriBusiness Division to use ICT to create wider and deeper impact while generating value for ITC. The model of eChoupal was designed by Mr. Sivakumar, now Chief Executive for Agri Businesses at ITC, to build a trust relationship and ITC brand in rural areas.

Mr Sivakumar, Chief Executive – Agri Businesses, at ITC Limited:

A graduate from the Institute of Rural Management in 1983, he served a farmers' cooperative for 6 years before joining ITC in 1989. He is an active member of the management committees of various industry bodies and several taskforces of Government of India.

Mr Shailesh Naik, General Manager, ITC eChoupal Channel:

An engineer and management graduate with over 15 years experience in managing diverse functions like marketing and sales, production and supply chain across industries, he led eChoupal into its 3rd phase, extending the reach of services to rural populations through the existing network of eChoupal kiosks.

Exchange rate for this case study: 1USD=50INR

INTERVIEW WITH MR SHAILESH NAIK, GENERAL MANAGER, ITC ECHOUPAL CHANNEL

- "What are three key features of the eChoupal model that made it work so well?
1) Trust: farmer's trust of ITC as a fair organization, and of Sanchalaks at the village level as a friend and mentor. Partner's trust in ITC to build a win-win ecosystem for them and their consumers.
2) Developing and leveraging a large network of partners with complementary skills, assets and service offerings.
3) Balancing short term and long term objectives to make sure we made the necessary investments.
- What would be your key advice to replicate eChoupal in other geographies?
Don't copy straight, instead look at local conditions. Understand what works and what doesn't locally. You will need to have a strong basic anchor, i.e. a large organization with a trusted brand and a long-term view, capable of rallying other organizations and to see the big picture of improving rural livelihoods behind the project itself.
- What is the main policy or institutional change that would help your project grow?
We have received good support from the government. As any large organization I would wish reforms could move faster.
- What is the top one wish you would have that would help your project grow?
I wish we could find more partners with aligned objectives."

Sources:

Interview with Mr Shailesh Naik, General Manager, ITC eChoupal Channel, on December 22, 2010

Field visit to eChoupal operations around Wharda, Maharsashtra; meeting with Amrit Choudhary, Manager, Rural Marketing Distribution; Prashant Wanzajari and Vilas Dhabale, eChoupal Sanchalaks; Kissan Deotale, farmer and eChoupal user; on February 15, 2011

http://www.itcportal.com/sustainability/lets-put-india-first/echoupal.aspx

http://www.isb.edu/sritne/QIVNewsletter/IndustryConnect.html

http://www.peerpower.com/et/782/ITC-eChoupal-to-quintuple-reach

http://www.scribd.com/doc/34828324/EChoupal

eChoupal: Hope or Hype ?, DANGI Neeraj, SINGH Harjit, American Journal of Economics and Business Administration, 2 (2): 179-184, 2010

eChoupal version 3.0, KUMAR SHARMA E., Business Today, Available at: businesstoday.intoday.in/bt/story/4799/1/echoupal-version-3.0.html

The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits, PRAHALAD C.K., Wharton School Publishing, 2004, and updated version 2010

What works: ITC's eChoupal and profitable rural transformation, ANNAMALAI Kuttayan, RAO Sachin, World Resources Institute, Michigan Business School, Kenan-Flagler Business School, 2003

Contact person for the project:
Choudhary Amrit, Manager, Rural Marketing Distribution: Amrit.Choudhary@itc.in
Naik Shailesh, General Manager, ITC eChoupal Channel: Shailesh.Naik@itc.in

ASHOKA FULL ECONOMIC CITIZENSHIP

eKutir

Improving small farmers' lives through franchised agro-kiosks in India

Executive Summary:

- **Organization:** Headquartered in Bhubaneswar, Orissa, eKutir is a Rural Social Enterprise registered under Indian Companies Act with branch offices and experiment stations in Bangalore and Chennai, and rural extension service centres in 3 districts of Orissa. eKutir is developing its Farmers Project with Grameen-Intel Social Business.

- **Project:** eKutir has been operating in the state of Orissa since 2008, accumulating knowledge of the local ecosystem and agriculture factors. In September 2009, it launched the eAgro initiative – franchised, local e-kiosks ("hubs"), supporting local farmers (5km radius) with expert and individualized agro advice and trade information. In 14 months, they successfully established 12 kiosks serving 6,000 farmers.

- **Innovation:** eKutir delivers all of the services needed by farmers at one focal point – the kiosk – run by a local entrepreneur in an "individual farmer-centric" model, leveraging different technologies (internet-connected computer, camera etc). The franchise mechanism for the entrepreneur and the configuration of farmers into collectives (Farmer Interest Groups) ensures that all are committed and involved. Farmers are involved in the design process of the business model so that the program continually meets their needs. They also benefit from a loyalty system that returns a portion of the fees to farmers in the form of free services.

- **Sustainability:** eKutir's holistic approach addresses several farmers' issues at once. The venture is economically sustainable both at the farmer (income improvement of 60% to 400%) and the franchisee levels with each service provided paying for itself within a few months. eKutir franchises its business model and e-services rather than the hardware, which entrepreneurs are encouraged to buy themselves. This makes the capex required to set up a new kiosk minimal at the central level and thus limits capital requirements for scale-up. Yet, to scale up at this stage, eKutir requires more capital to invest in additional operational capacity, for building up a portfolio of services, and for increased delivery capability.

Project current status

- **Date of creation:** Pilot launched in September 2009, roll-out in 2010-2011

- **Service delivered:** Through a single-window interface:
  - Provides advice on agro-practices: 1) Through queries to experts (in universities or labs) via internet searches or direct conference calls (with additional options to provide pictures of soil or plants for reference) on topics related to soil testing, advice on better agro growth practices, climate and weather updates, and pest/disease management; 2) Through broadcast in the kiosk of agricultural videos made by eKutir (currently small scale and free of charge, still in development)
  - Supports and enhances economic opportunities by integrating with the agro-ecosystem: market price verification, individual production planning based on information given by farmer creating link with buyers in advance, aggregation of farmers' supply to sell in bulk on market, aggregation of farmers' demand for fertilizers and inputs to buy at lower prices

- **Benefits to users:**
  - *To end-users (farmers):* Increased productivity, lowered costs of inputs, higher prices received for products sold, decreased time required for product transportation, decreased product waste or spoiling, increased access to high quality inputs (seeds, fertilizers, etc.) and access to financial services based on transaction history
  - *To village entrepreneurs:* Net income multiplied by 10 in 1 year compared to previous job
  - *To input suppliers:* Increased market size (~ 5 time larger compared to baseline reach) with direct and transparent access to entire farmer base

- **Customers:** Small farmers with 2-3 acres of land, 6-8 people in family, earning subsistence income. To date, 6k farmers' families (~30k people) served in Orissa province

- **Competitive landscape:**
  - *Substitution before project: For agro-information:* None (agro-information irrelevant and scattered). *For sale channel:* Traders working at Mandis (government-mandated marketplace) or producer-run cooperative societies
  - *Competition: For agro-information:* None. *For sale channel:* Corporate initiatives to sell fertilizers or seeds through existing supply chain of wholesalers, retailers and traders (potentially future partners who would benefit from use of eKutir's methodology)

- **Partners involved:**
  - Grameen-Intel (conceptualized eAgro initiative with eKutir): Responsible for branding strategy, accessing global markets, supporting programs, partly funding existing and future application and hosting services
  - National Bank for Agro & Rural Development (NABARD): Supporting micro-entrepreneurs[57]
  - Kaliga Institute of Rural Management: Creating content and operationalizing it for social engineering (entrepreneur selection, mentoring and capacity building, farmer group formation, group leader selection, training, monitoring, etc.) and for supply chain management

---

[57] NABARD is the nodal national body (in India) that oversees agriculture, rural development and finance. It is a policy maker, regulator as well as enabling agent for rural matters. They finance and support MFIs, Rural Banks and agro sector agencies, for these to reach out on their various programs. They also are an advocate of social entrepreneurship and financial inclusion- supporting capacity building and training programs for entrepreneurs. They provide ongoing support in developing technology assisted inclusionary pilots, and helping scale up.

- Orissa University for Agro Technology (OUAT): Lending technical support to eKutir's farmers
- Rotary International Bangalore: Responsible for replicating eKutir in the State of Karnataka as a pilot for eventual scaling through Rotary club chapters across India and in other developing countries
- Work in progress partnerships:
  - Bharath Technologies Solutions Pvt Ltd: Go-to-market partner with access to over 25k kiosks in rural India (through a PPP program)
  - Global Agrosystems Pvt Ltd: Leader in contract farming and food processing: to help farmers get standard quality and integrate vertically, and move them up the value chain
  - eFresh: Providing best-in-class agro practices and certification services (for farmers to get international certification), and a portal for marketing such certified produce to international markets (through joint undertaking or "build and operate" models)

- **Technology aspects:**
  - *At franchise level:* Technology kept at bare minimum:
    - *Hardware:* Netbook equipped with digital camera (to provide direct contact between farmers and experts if needed)
    - *Connection:* Fixed broadband (where available) or dialup broadband
  - *At central level:* Software: Initially MS Access database and MS Groove (for up to 10-15 entrepreneurs) developed in-house, now using Java enabled applications. Final stages of developing more integrated, robust and modular IT application to support scale up where there is minimal or sporadic lean connectivity
  - *Data security management:* Standard security and encryption protocols, with PGP (pretty good privacy) paradigms
  - *Maintenance:* Software maintenance and helpline maintained by eKutir's subsidiary and hardware maintenance managed by local entrepreneurs (trained by eKutir) and technology providers for more complex issues

- **Business design:**
  - *Recruitment and capacity building:* Franchisees recruited among entrepreneurs with
    1) Basic undergraduate education
    2) Business acumen and yearning to run social business
    3) Understanding of basic farming
    4) Relationship management skills
    5) Micro investment capability
    6) Yearning to make a name in the community
    7) No current businesses to ensure sustained focus
  - *Training:* 90 days of training provided for original group of franchisees, partially replaced with apprenticeship (25 to 35 trainees are currently working with franchisees to create pool of eKutir entrepreneurs for future hubs)
  - *Marketing:*
    - Mainly word of mouth (with first adopters often "showing off" their good results, and people reticent to use the service at first joining in later), but also road shows, trainings and demonstrations, PR and leverage of good relationships with local governments, suppliers and marketers
    - In current business, priority given to existing registered farmers at entrepreneurs' point (rather than new customers), to ensure quality of service before scale up
    - Customer participatory model: Feedback taken into account to elaborate new services
    - Loyalty system giving back part of profit to customers in form of free services (as requested by customers' feedback)
  - *Distribution:* 12 hubs to date, each serving 500 farmers usually grouped in 20-25 people groups with elected leader who deals with entrepreneur. Agro information shared among farmers, even those not registered

HYSTRA
hybrid strategies consulting

- *Pricing:* Based on Mohamed Yunus' declaration (Nobel laureate 2006) "Unless there is a tangible benefit, don't charge people", pricing decisions made in agreement with farmers
- *Revenues:* 2 types of fees:
  - Membership fee paid by farmers to entrepreneur (non-tangible charge as being member in itself is seen as valuable) initially proposed at 400 INR one time ($8) was adjusted to 150 INR ($3) per crop cycle following farmers' demand
  - Additional fee for each service – e.g. percentage of each transaction such as fertilizers purchased (embedded in price paid by farmer) or percentage of production sales (embedded in price paid by product purchaser, paid to eKutir that redistributes fees to entrepreneurs and farmers)
- *Cost split:* Expenses for office and computer infrastructure at head office, including software and service development: borne by eKutir. Capital expenditures (hardware) and operating expenses for village e-hub (office rental, employees, telephone, broadband internet, etc.): borne by local village entrepreneurs
- *Revenue split:* Range from 70-30 to 50-50 (eKutir versus village entrepreneur) depending on risks and rewards borne by each actor
- *Franchisee financing:* At master franchise (e.g. existing kiosk network, cooperatives, MFIs, with which eKutir partners) level: None. At local franchise level: Family or MFI loan with help of eKutir, but with requirement of minimum initial cash investment from franchisee to demonstrate commitment

- **Regulatory aspects:** License needed to sell fertilizers (training of entrepreneurs by eKutir to apply for and obtain requisite permissions and licenses)

- **Monitoring and impact measurement:** No impact study but study of economic results conducted in 2010 at end of pilot (notably on productivity and user income)

- **Awards/ Recognition:** State Government of Orissa and NABARD for services to farmers

- **Future plans and next steps:**
  - Goal to deliver services to 12.5m small farmers (~100m dependent) through 25k kiosks by 2014-15
  - Plans to set up two separate businesses leveraging eAgro initiative:
    - ICT enabled entity to serve as gateway of micro-finance to BoP farmers (i.e. offer them solutions for their financial requirements even as small as $100), in collaboration with different Rural Financial Institution and 26Celsius, a company specialized in designing sustainable financial products
    - YouTube-type, video-based, agro-vocational, web-enabled social business to target vocational education delivery through eKutir network of entrepreneurs
  - Entering new sectors such as education, health and microfinance: currently looking for partners
  - Introducing new clean energy technology to cater to electricity needs of farmers (water pumps, etc.) such as solar and rice husk gasification, through the kiosks or separately
  - Plans for replication in new locations in India and Africa: Discussions with World Bank (Infodev), iFAD, CARE, Oxfam, SDC, BTL about expansion through various business models and franchising

Technical training to entrepreneur and village operator

ASHOKA FULL ECONOMIC CITIZENSHIP

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

▪ **Problems addressed:**
- Lack of farmers' awareness of quality of their main asset (soil nutrition) and linkage between soil type, crop, required nutrition and market
- Mostly spurious seed/ fertilizer available to farmers
- Agricultural R&D too far from the field and not seen as relevant by farmers
- Quantity of harvest in excess of subsistence production too small to be sold
- Unjustified margins taken by intermediaries in farming produce value chain
- Little access to financing for farmers

▪ **Solution provided:**
- *Quality:* Simple internet and computer tool with single window interface
- *Comprehensiveness:* Integrating the various silos of the agriculture ecosystem, cost-effectively addressing whole range of farmers' needs for information, expert advice and trade support

▪ **Scale and reach:**
- 12 franchisees serving around 6k farmers families (30k people) in Orissa in 14 months of operations
- 20% penetration rate (still mainly early adopters)

▪ **Acceptance and usage:** High customer trust:
- Facilitated by transparent payment procedure with receipt to avoid corruption and abuse
- Anecdotal evidence of trust and customer loyalty: Farmers coming to eKutir for advice on other matters

▪ **Socio-economic impact:**
- *For farmers:* Saved costs and increased income; empowerment and self-confidence notably through increased concerted group participation and resultant collective collaboration ("now we can control our destiny")
- *For entrepreneurs:* Increased income, enhanced stature in community: "seen as a savior"

▪ **Environmental impact:** Anecdotal evidence:
- Improved water resource management
- Reduction in indiscriminate use of chemicals and better use of fertilizers
- Organic farming methods (using manure from cattle, etc.)

▪ **Other impact:**
- *For all:* Increased transparency and trust in the system
- *For agro researchers:* Direct link to field, allowing for targeted studies on what is most needed
- *For microfinance institutions:* Detailed information on farmers to assess credit-worthiness and manage risk, linking new customers (~80% of population) who previously had no formal access to affordable finance, to financial opportunities

HYSTRA
hybrid strategies consulting

2/ ECONOMICALLY SUSTAINABLE?

- **At farmer level:**
  - *Membership fee:* $3 per crop season (~3 seasons per year)
  - *Cost of service:* Transaction fee depending on services (e.g.,10-20% on seed sales, less than 5% on fertilizer sales, all agreed upon by farmer groups)
  - *Average household income:* $400 - $1k per year (proceeds from sales in addition to subsistence production)
  - *Avoided cost:* Mandis (government-mandated marketplace giving up to 80% margins to intermediaries)
  - *Income increase:* During pilot: 60% to 400% compared to previous year
  - *Ability to reach the poorest:* Low end BoP willing to pay for service

- **At local franchise level:**
  - *Cost to set up one kiosk:* $800 (camera, laptop, connectivity, electricity – mostly arranged by entrepreneur himself)
  - *Franchisee fee:* One-time $200 for access to eKutir services (10k INR)
  - *Franchisee revenue:* Up to $400 (20k INR)/mth, i.e. revenues multiplied by 10 compared to previous job (able to afford motorcycle!). Best performing kiosk: Turnover of $62-$65k in 2010 with profit of $8k
  - *Estimated potential annual turnover per hub:* $35k-$250k
  - *Breakeven:* Opex covered in 4-5 months, full breakeven in 6-7 months

- **At project level:**
  - *Employees:* 4 executives at head office, 40 extended staff (at Grameen Intel, eKutir IT subsidiary, KIIT, hubs), 6 crop experts and other various experts in their fields (e.g. seed and fertilizer sellers)
  - *Revenues 2010:* $1k per hub per year (still early stage, estimated at $5k/hub/year when at scale)
  - *Cost recovery:* Opex recovered (each service pays for its own cost), expected to turn profitable in 2011 at least for existing services
  - *Funding:* $1.3m seed funding received for pilots. Looking for 1) grants for entrepreneur training and capacity building, 2) $5m in investment to set up kiosks and franchises in new locations and expand range of services

Entrepreneur effort on mass motivation of farmers' community

eKutir sign on the kiosk

ASHOKA **FULL ECONOMIC CITIZENSHIP**

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Increased connectivity in rural areas and better infrastructure to have low cost broadband solutions
  - Resources (human and financial) for training of farmers and entrepreneurs
  - Stabilization of regulation in order to offer microfinance services (many recent changes in microfinance regulation)
  - Investment to fund capital costs and develop new services
  - New partnerships with development agencies, technological companies or funding partners

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Legal context authorizing bulk purchaser of agro-products to buy directly from farmers
  - Similar issues for farmers (lack of market access and agro-information, etc.), rewarding kiosk users with immediate benefits so that enough of them use the kiosk rapidly
  - Sufficient connectivity and low cost broadband solutions

THE PEOPLE

STORY OF THE ENTREPRENEURS

Srinivas held senior level global executive positions at General Electric (CIO), Intel (Principal Architect, Director Rural Data Services, New Biz Initiatives), Satyam (Principal Consultant- eBiz), Sequent (Director Consulting, South Asia ops). As an entrepreneur, he co-founded and ran a telecommunications convergence co-TeleParadigm Networks, taking it successfully through to its M&A. He has advised several national governments (Thailand, Philippines & India) on their Vision level "G2B & G2C" initiatives.

INTERVIEW WITH SRINIVAS B GARUDACHAR, STRATEGIC BUSINESS DEVELOPMENT, GRAMEEN-INTEL SOCIAL BUSINESS

- "What made you start this project?
  I am committed to improving farmers' financial inclusion, as I am convinced that the first step to solve poverty is to improve the BoP's lot financially by providing them with better income opportunities. When they have a higher income, then they can access other services.
- What are the 3 key challenges you have faced?
  1.Technology: Both designing appropriate technology and making sure there is enough connectivity.
  2.Entrepreneurs: Finding the right entrepreneurs is very difficult. Rural areas are run by power groups and cliques. Our entrepreneurs need to be 1) free of these pressure groups, 2) business leaders and 3) interested in investing. Training also needs to be redefined to make sure that entrepreneurs are fully prepared for any situation.
  3.Acceptance by all stakeholders: suppliers, buyers, experts, farmers themselves. The project cannot work without a common agreement.

HYSTRA
hybrid strategies consulting

Committed to the cause of sustainable development of the down-trodden, he is exploring and building "IT-in-a-Box" type tools, value-chains, and sustainable business models that accelerate large scale socio-economic inclusion of disadvantaged communities, while creating engines of social entrepreneurship, employment and growth. Srini also has a strong domain understanding of agriculture — a practicing horticulturist (he personally has over 35 different types of tropical fruits), a noted orchidologist (collection of over 600 species of specimens) and an active wildlife conservationist. He is an Executive Committee Member of The Orchid Society of Karnataka, a Charter Member of TiE (The IndUS Entrepreneurs) Bangalore, and has served as an advisor to several technology (and social business) companies from startup to growth.

He has mentored a young team of budding scientists to create an eco-friendly pest repellant and tonic for plants, winning national awards for innovation instituted by the Government's Dept Of Science & Technology & CII, two years in a row. Education wise, Srini has a BE (Mechanical Eng) & a Post-Graduate degree in Statistics and Engineering from Kansas State University, USA and was nominated as a Six Sigma Black Belt at General Electric.

Exchange rate for this case study: 1USD=50INR

▪ What makes eKutir so unique?
It is a farmer-oriented system with a sense of community ownership, very localized and high touch, committed to long term sustainability. The service is democratic, even the membership fee is agreed upon by the farmers themselves. The venture is market based, and charging a membership fee ensures farmers' commitment. Being potentially profitable at all levels makes this initiative scalable and globally replicable. It is really capable of serving the cause of rural development anywhere in the world.

▪ What would be your key advice to replicate eKutir in other geographies, and specifically in Africa?
Identify the needs of farmers, the proper entrepreneurs and form groups of farmers if they are nonexistent. Also, use appropriate technology. You need to get together the agro ecosystem players, stringing them together including suppliers, marketers and experts.

▪ What is the main policy or institutional change that would help your project grow?
This is a micro-entrepreneur-driven, citizen-empowered initiative with little government involvement. However, government should help define and implement policies that increase connectivity coverage. Internet infrastructure is a real issue in rural areas.

▪ What is the main internal capacity or resource that would help your project grow?
eKutir needs partners with a sustainable development as well as a business (as opposed to a philanthropic) mindset, on both technological and financing aspects to develop new services and finance the roll-out."

Farmer showing his crops growth after following eKutir's advice

Sources:

Interview with Srinivas B. Garudachar on November 22nd, 2010; January 28th, 2011 and February 17th, 2011

E-Agro Initiative of eKutir and the Grameen Intel Social Business, Srinivas B. Garudachar, Available at: www.eKutir.net/eKutirGrameen-IntelpaperoneAgroinitiativeimpactonsmallfarmersver3-1.pdf

Contact person for the project:
B. Garudachar Srinivas, Strategic Business Development,
Grameen Intel Social Business: srinivasbgarudachar@gmail.com

ASHOKA FULL ECONOMIC CITIZENSHIP

Narayana Hrudayalaya Hospitals
www.narayanahospitals.com

"Quality cardiac healthcare for the masses" stemming from India, through integrated use of ICT

Executive Summary:

- **Organization:** The Narayana Hrudayalaya Group (NH) is a private group of hospitals with 25 hospitals and two main campuses ("Health Cities") in India. The main Health City is in Bangalore, Karnataka, including notably the Narayana Hrudayalaya Heart Hospital, the second largest cardiac hospital in the world; the second one is in Kolkata, West Bengal. The Group is connected digitally to nearly 800 places in Asia and Africa for remote diagnosis and training.

- **Project:** In India, only 90k cardiac surgeries are performed out of 2.4 million needed yearly, mainly due to prohibitively high costs for the majority of the population. NH was founded in 2001 by Dr. Devi Shetty with the objective of providing cardiac care to a diverse patient base at affordable prices. NH Health City in Bangalore has 3,200 beds (1,000 for cardiac care, with 95% success rate i.e. one of the highest in the world, and including the largest cardiac surgery service for children in the world with 10-12 children operated per day). Taken together the NH system has 5,000 beds in India. In its main Heart Hospital in Bangalore alone, it has provided remote cardiac care to over 300,000 patients, heart outpatient service to over 300,000 people, 70,000 heart cath procedures and 47,000 heart surgeries in close to 10 years of operations.

- **Innovation:** *Technology:* NH has created off-patent trans-telephonic ElectroCardiogram (ECG), which sends ECG directly from remote health centers to NH experts through phone lines (in use in 328 locations as of 2011). It also makes extensive use of videoconferencing, both one-to-one for remote consultations, and one-to-many for continuous medical education to partner health institutions globally (439 telemedecine locations as of 2011). *Business model:* 1) In 2003 Dr. Shetty initiated low-cost insurance scheme Yeshasvini, now implemented by the whole state of Karnataka, and replicated it under different forms in other states: low-income farmers pay low premiums and are given access to same high-quality facilities (such as those of NH) as patients paying full-price. Providing remote expert screening avoids useless transportation and multi-consultation costs, and hospital management through tailor made software raises the efficiency of the hospital, leading to a decrease in cost of care that makes this insurance scheme viable. 2) NH sells its patented ECG technology at cost and gives free training on its use and free remote diagnosis via ECG to all who deliver free consultations with it.

- **Sustainability:** In 10 years NH has become the second largest cardiology hospital in the world. Thanks to the use of ICT at all levels and an innovative focus on minimizing administrational roles for operational staff, it serves more patients at lower costs than other cardiac institutes while high volume also allows bargaining for low prices of supplies. The innovative insurance scheme initiated by Dr. Shetty, and donor funding covering 20% of the hospitals' budget, makes it sustainable for the poorest to receive world class treatment (for cardiac care, 50% of patients do not pay full rate, including 30% covered by their insurance), leading to an average cost of cardiac surgery at $2,300, (a tenth of the US cost), and for NH to enjoy a 7.7% profit after taxes, higher than the average of US hospitals. Expansion is already taking place through telemedicine centers (NH has the largest telemedicine network in the world) in several countries of Asia and Africa. Building "medical cities" throughout India, NH aims at 30,000 beds in 2015, which would make it the largest private-hospital group in India.

Project current status

- **Date of creation:** 2001 for cardiac care, including ECG technology, 2002 for telemedicine, 2003 for Yeshasvini insurance, and following years for additional hospitals and services

- **Product / service delivered:**
  - Access to affordable, first class hospital services (in Bangalore Health City: cardiac, cancer, orthopedic and eye care) including for children. Accepting patients covered by insurance schemes for the poorest (e.g. Yeshasvini in Karnataka, Rajeev Gandhi Arogya Yojana in Uttar Pradesh[58]) but also patients without life insurance coverage at discounted rates
  - Worldwide telemedicine centers to provide specialist health care in areas lacking specialists: transmission of patient data (including through mobile VSAT Van to act as mobile satellite terminal in remote areas when necessary), videoconferencing for consultations and specialist training, access for local general practitioners to cardiologists through trans-telephonic electrocardiogram (ECG) technology
  - Training in cardiology and other specializations for traditional medical students, and in patient care for low-income women

- **Customers:** General population, urban and rural, including international clients (about 20% of clients) and all socio-economic classes. 3k patients seen in Bangalore Health City alone every day. More than 5m low income people enrolled in Yeshasvini and other similar schemes

- **Competitive landscape:**
  - *Substitution before project:* For the BoP, no possibility to get similar quality of care
  - *Competition:* No significant one. Over 12% of cardiac services in India provided by NH

- **Financing partners involved:**
  - *SMEs:* Shankaranarayana Constructions (seed funding for land)
  - *MNCs:* Tata Finance (seed funding: soft loans for equipment purchase); Texas Instruments (round B investment: low-cost technology); Bioson Foundation (2.5% stake) and ICICI Lombard Ltd (round B: for 2004 launch of Arogya Raksha insurance scheme); AIG (round B: 12.5% stake)
  - *CSOs:* Asia Heart Foundation (non-profit channeling grants and donations for NH, owning and administering Kolkata Health City), Hrudayalaya Foundation and Narayana Hrudayalaya charitable trust (HFNHCT round A investment: trust for educational programs); Armenian Church (round A investment: pledge of US$1m)
  - *Governments and private insurance companies:* Partnerships with local state governments for insurance schemes
  - *Individuals:* Various donations for working capital or construction of new units such as cardiac diagnostic lab

---

[58] *Insurance scheme: Yeshasvini is the most used scheme at NH. It costs patients $2.8/year (Rs 140) for free outpatient consultation, cashless treatment including 1.7k surgeries, inpatient treatment and outpatient investigations at discounted rates in 350 hospitals. It only accepts members who come as a group of people organized together for a reason other than healthcare (e.g. economic reasons, for example self-help groups), and only until 75 year old. As a public private partnership, the scheme additionally receives a $0.60/year (Rs 2.5) government subsidy in its first year. Other similar schemes from neighboring Indian states are also accepted at NH.*
Full farmer cooperatives are part of the scheme. Each member is given a card. When they go to the hospital to get examined, they do not have to pay for consultation. If they need an operation, the hospital sends a request to insurance company thanks to patient information on the card, and if surgery is approved, third party pays a discounted price (50-60% of full surgery price) to the hospital, so that patient does not have to disburse money. All data are sent via the internet, including the bill.

- **Technology aspects:**
  - *At patient level:* All medical documents digitalized and delivered via email upon request
  - *At central level:* 2 hubs in Bangalore and Kolkata: Connectivity: Through ISRO (Indian Space Research Organization) satellite technology, ISDN lines, and broadband internet. Hardware: Proprietary trans-telephonic ECG technology developed in house. Fully equipped telemedicine room. Software: NH management and Electronic Medical Records (EMR) softwares developed in-house specifically for NH hospitals with help of software company
  - *At network level:* 5 networks communicating with Bangalore and Kolkata hubs:
    - 16 "Coronary Care Units" (CCU) set up by NH at Indian health centers lacking heart specialists, equipped with ECG technology and videoconference facilities: first round consultations done over satellite network with follow-up review of data by NH cardiologist
    - Karnataka Tele-training for Cardiac Screening (using same videoconference facilities as CCU)
    - Family Physicians Network of TTECGs (FPNT): ECG technology installed at 328 health centers, with software for tele-transmission to NH
    - Hrudayalaya Post: Karnataka post offices connected via internet and software applications to NH, to digitalize and send patient medical files for expertise and diagnosis
    - NH telemedicine centers linked to international care clinics (e.g. Kuala Lumpur) and international medical universities (e.g. Pan African Network)
  - *Training needed:* In-person training and/or tele-consultations for local staff and technicians. ECG technology purchasers provided with technical training free of costs. For interns at NH, onsite training for 6 months
  - *Data security management:* In-house security protocol, none of the security measures outsourced. Secure servers located at 2 central hubs
  - *Maintenance:* All done by in-house specialists

- **Business design:**
  - *Staff recruitment process and capacity building:* Shared social mission and reputation of Dr. Shetty attracting international talent. Focus on developing talent from within applying Henry Ford's management principles of developing specialized skills at scale, instead of promoting lateral entry from outsiders, preserving institutional culture: several medical education programs provided directly at NH
  - *Marketing:*
    - *Outreach:* Program to build strong rural network in Southern, Eastern and North-Eastern regions. Established linkages with small family practices that refer patients. Leveraging of Dr. Shetty's international reputation to attract funders and patients globally
    - *Value proposition:* "Caring with compassion": Quality of care at sliding scale cost, allowing affordability of high-quality care for all patients
    - *Customer insight:* From linkages with local primary care physicians and expertise of NH staff
    - *Education and training programs:* To improve staff retention and development. Loans and subsidies from local governments to encourage training of BoP individuals for nursing positions
    - *Customer life cycle:* Attracted by reputation and accessibility, use of mobile outreach vans and telemedicine initiatives, front-office staff to guide patients through entire treatment and follow-up care
    - *Customer loyalty:* Ensured by quality of care and pricing/insurance schemes. Employment opportunities for BoP and other local residents as part of CSR program encourages patients to see NH as part of their community
  - *Distribution:* 2 "Health Cities", 25 NH units in India. 439 telemedicine centers globally, including 56 telemedicine centers in Africa called the "Pan-Africa Network", and 328 health centers using ECGs

HYSTRA
hybrid strategies consulting

- *Pricing:*
  - *Medical services:* Discounts for patients based on daily available funds, recommended by physicians and senior non-medical staff (even if not insured). Average heart surgery price: $2.3k (compared to $20k-100k in the US)
  - *Telemedicine education and services:* ECG technology sold $260 (13k INR). Remote ECG diagnosis, videoconferencing consultations and telemedicine classes provided free of charge
- *Cost split:* Cost of surgeries partly covered by average $1m donations per month. Free use of satellite infrastructure of ISRO for telemedicine services offered by Government of India. Medical supply costs reduced by up to 35% thanks to bulk purchase
- *Revenue split:* 53% from heart surgery, 25% from catheter procedures, 9% from CCU, 8% out-patient fees, 3% from neurosurgery, 2% from general surgery
- *Payment: Medical services:* For surgeries, "package" payment in advance (same cost independently of how long patient stays in hospital). Cashless treatment for patient under insurance schemes. *Insurance:* Paid yearly at beginning of each year of coverage with help of cooperatives involved, to avoid collection cost
- *End-user financing:* No credit, but cross subsidy of operation cost for lower income patients (20% of cardiac care patients), or cost covered by insurance designed for the poorest (30% of cardiac care patients)
- *Regulatory aspects:* Compliance with sponsor requirements, Good Clinical Practice (GCP) guidelines and adhering to ethical standards

- **Monitoring and impact measurement:** No social impact study yet internally, done by business school only. Internal technology impact study not yet done by NH

- **Awards:**
  - 2002: Rajyotsava Award
  - 2003: Sir M. Visvesvaraya Memorial Award; Ernst & Young- Entrepreneur of the year; Padmashree
  - 2004: Dr. B.C. Roy Award; Citizen Extraordinaire, Rotary; India Innovation Award; By NDTV & EMPI (to Micro Health Insurance Division)
  - 2005: Social Entrepreneurship Award – World Economic Forum; Schwab Foundation

- **Future plans and next steps:**
  - Doubling number of heart surgeries per day at NH campus, to 70 per day
  - 1.5k bed increase in Narayana Health City
  - Construction of Health Cities across India (4 proposed)
  - Expansion of international telemedicine network
  - Further development of academic and training infrastructure

Narayana Hrudayalaya Cardiac Care Hospital in Bangalore Health City

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** In India: 90k cardiac surgeries performed out of 2.4m needed yearly, mainly due to prohibitively high cost for majority of population. 80% population in rural areas, 80% of doctors in urban areas. Globally: Cardiac care not affordable for 92% of population, growing rates of heart illness

- **Solution provided:**
  - *Quality:* World class technology for surgery (95% success of cardiac care, similar to US best hospitals, lowered by operations on new-born babies); robust infrastructure for telemedicine (from ISRO)
  - *Comprehensiveness:* Active on most aspects of health value chain, including insurance for the BoP

- **Scale and reach**
  - *ICT activities:*
    - ECG: Total of 250k remote diagnosis (as of March 2011): 250/weekday and 100 on Sunday
    - Teleconsultation: Total of 60k (as of March 2011)
    - Telemedicine classes: 3/week with Kolkata, 6-7/month with PanAfrica e-Network (53 African countries)
  - *Overall medical services in Bangalore Health City:*
    - 5k beds, 3k patients seen daily, total of 308k outpatients (for heart and other)
    - Average 32 heart surgeries/day (12% of heart surgeries in India), including 10-12 on children, in 24 operating theatres
    - Total of 70k cath procedures, 46k heart surgeries performed (as of March 2011)
  - *Medical services globally:* 2 Health Cities, 25 NH units, 328 health centers equipped with ECG and 439 telemedicine locations globally (Africa and Asia)
  - *Insurance started by Dr. Shetty:* Yeshasvini (in Karnartaka): >3m people enrolled. Rajeev Gandhi Arogya Yojana (in Uttar Pradesh): >2.4m people enrolled

- **Acceptance and usage:**
  - *Acceptability:* Leveraging family medical network to ensure comfort of users, examined remotely. Focus on incorporating local talent, preserving cultural norms. 100% retention rate at doctor level
  - *Usability:* NH network available in many locations for telemedicine. Only requirement for patient to do videoconference consultations: send medical file in advance. ECG diagnosis in max 15 minutes, 24/7

- **Socio-economic impact:**
  - *Social outcomes:* Cardiac care and other healthcare available to BoP
  - *Economic impact:* Insurance schemes allowing access to care. 40-50% of clients treated at subsidized rates
  - *Gains in efficiency due to technology:* Decreasing cost of healthcare by avoiding transportation and useless on-site consultations (thanks to pre-screening through telemedicine), entailing possibility for insurance to viably cover poorer people

- **Environmental impact:** Not mentioned

- **Other impact:** Job creation targeting BoP through patient care training (60 trainees/year)

HYSTRA
hybrid strategies consulting

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Initial cost:* Insurance (Yeshasvini): $2.80/year (140 INR) for coverage of 1.7k surgeries up to $4k (200k INR)
  - *Direct cost of services:* Free telemedicine services. Direct services at discounted costs based on customer's ability to pay, possibly free. CABG[59] (most common heart surgery) costs: $2.4k at full price, $1.3k if paid by insurance. Most expensive procedure: artificial heart $80k, 20%-200% cheaper than elsewhere
  - *Additional indirect cost:* Transportation to point of care or telemedicine location
  - *Average household income:* $735 (34.5k INR)/year
  - *Ability to reach the poorest:* 40% BoP patients among NH patients, 50% for cardiac care

- **At third party level (other health centers):**
  - *Initial cost:* ECG material sold by NH: $260 (13k INR)
  - *Service cost:* Consultations and remote expertise offered for free by NH staff
  - *New economic opportunity:* Possibility to treat additional patients for whom service was not affordable, through remote expert advice and/or through insurance scheme

- **At insurance trust level (Yeshasvini):**
  - Not for profit public-private partnership
  - *Revenues:* $8.4m/year from premium of 3m beneficiaries

- **At project level (NH):**
  - *Employees (Bangalore Health City):*
    - 220 doctors, including 40 heart surgeons
    - 160 students as interns (already graduated, but not yet operating)
    - 3.5k nurses (3 nurses per patient in heart care, 1 nurse for 5 patients when no intensive care required), 2k for Heart Hospital only including around 520 for surgeries
    - 60-70 administrative staff for Heart Hospital only
  - *Turnover 2010 of all NH:* $200m (10bn INR), up from $60m in FY2008. $50m (2.5bn INR) from Bangalore Health City alone
  - Profit 2010 of all NH: 7.7%
  - *Funding:* 10% of funding for Bangalore Health City coming from donations directly to Bangalore Health City. 20% of budget for other operations coming from donations channeled through AHF. Rest of budget coming from hospital revenues

Videoconference room for remote medical training and remote diagnosis

[59] *CABG: Coronary artery bypass graft*

3/ SCALABLE AND REPLICABLE?

▪ **Requirements/ pre-requisites for the project to scale:**
- Overcoming bureaucratic public sector requirements to expand insurance scheme (e.g. in current regulation, insurance schemes are monitored by government which takes a cut in revenues, making sustainability harder to achieve)
- Overcoming regulatory hurdles to starting new training programs/colleges, particularly for staff education (among others on telemedicine and medical technology use)
- Overcoming import duties for parts used in off-patent technologies (production expansion currently limited by high duties, raising costs of parts)
- Continued donations through trust, individual donors or by the hospital as cross subsidies to sustain concessional rates

▪ **Additional requirements/ pre-requisites for the project to replicate:**
- Support from government to fund similar insurance scheme as that used in Bangalore, allowing the poorest to benefit from similar quality of care
- Sufficient connectivity and/or availability of free satellite infrastructure to use telemedicine

Computers linked to ECG hardwares for remote real-time expertise

THE PEOPLE

STORY OF THE ENTREPRENEUR

Dr. Devi Shetty is a world-renown cardiac surgeon and the Founder and Chairman of NH. He trained in cardiac surgery in the United Kingdom before returning to India to start the Manipal Heart Foundation in Bangalore and the Asian Heart Foundation.

He was the first in India to perform neonatal heart surgery on a baby who was only a few days old, and he counted Mother Teresa among his patients. He is also the initiator of the current Karnataka healthcare scheme, Yeshasvini, specifically designed to enroll previously unaccounted for farmers and low income populations in rural areas.

Every day, 6 days per week, in addition to administrative meetings and tasks, Dr. Shetty performs one or two heart surgeries and sees on average 50 patients who have sometimes travelled for several days to see him. His staff is enthusiastic about their work to the point that the doctor attrition rate at NH is null.

He has built his hospital on the idea that no patient should be turned away for any reason, cost least of all. He considers healthcare to be "nothing but the interaction between man and machine" and has devoted his life to offer hi-tech surgeries at extremely affordable prices so that all patients have access to cardiac care. As he puts it: "The rich come here for the world's best heart care. The poor come here for the world's kindest care, for no one here is turned away for lack of funds."

INTERVIEW WITH DR. DEVI SHETTY, CHAIRMAN AND FOUNDER OF NH

- "What was your aha moment?
  As a heart surgeon I see hundreds of patients that can't afford heart surgery. I wanted to create a system to make cardiac care affordable so that everyone could receive proper care.
- What key challenges you have faced?
  Funding was the largest initial challenge, but through the generosity of my family it was overcome. Once there is funding there is no other challenge.
- Why has your model not taken up the world yet?
  Most of current models would find it impossible to follow our model because it is based on a social mission that seeks to reduce costs to the patients wherever possible. Many other hospitals are profit focused; we make a profit without forgetting the core mission.
- What is the main policy or institutional change that would help your project grow?
  An idea would be to launch nationally a mobile-based insurance scheme that allows people to subscribe and pay for care on their cellular devices. There are 750 million people using mobile phones in India and we need to leverage that technology to give people access to care.
- What is the main internal capacity or resource that helps your project grow?
  The belief in the economy of care – that everyone is entitled to high quality healthcare. It is critical to have a talented staff that believes in this social mission.
- What is the top one wish you would have that would help your project grow?
  The expansion of a system of care for all underserved population with a network willing to invest billions into making care affordable for all. Telemedicine is a great way to improve care for low-income people, saving them time and money. For example, in the US, Native American Indians are underserved healthcare-wise whereas the bandwidth is very good in the reserves. A Skype health kiosk could be set up there to offer them primary healthcare and access to medical experts."

Exchange rate for this case study: 1 USD=50 INR

Dr. Shetty with one of his 50 daily patients in his office at 7:30pm,
after having performed 2 heart surgeries on that same day

Sources:

Interview with Dr. Shetty, Chairman, on February 2, 2011

Interview with K.S. Vasuki; General Manager, Corporate Relations; on March 31, 2011

Visit to Narayana Hrudayala Hospital in Bangalore, Karnataka; meeting with Dr. Shetty, Chairman; K.S. Vasuki; General Manager, Corporate

Relations; Mattew Sid; In-patient care, Candidate PhD; on February 16, 2011

Hrudayalaya Narayana Hospital Website: www.narayanahospitals.com/aboutus.html

"Dr Shetty and his business with a heart", Neelima Mahajan-Bansal, Forbes India, July 7, 2009, Available at: ibnlive.in.com/news/forbes-india-dr-shetty-and-his-business-with-a-heart/96567-7.html

"First break all the rules, The charms of frugal innovation", The Economist, A special report on innovation in emerging markets, Apr 15th 2010. Available at: www.economist.com/node/15879359?story_id=15879359

Health Care for All: Narayana Hrudayalaya, Bangalore, Prabakar Kothandaraman & Sunita Mookerjee, UNDP Case Study, 2008, Available at: growinginclusivemarkets.org/media/cases/India_Narayana_2008.pdf

Narayana Hrudayalaya Heart Hospital, Bangalore Abroad – Why Come To India PR Log - Global Press Release Distribution, Nov 2009

Narayana Hrudayalaya Heart Hospital: Cardiac Care for the Poor by Tarun Khanna, V. Kasturi Rangan, Harvard Business Review, 2005

Contact person for the project:
Shetty Devi, Chairman: devishetty@hrudayalaya.com
Vasuki K.S., General Manager Corporate Relations

6. Crowdsourcing and Crowdfunding

Summary

Crowdsourcing models treat the BoP as participants in a value proposition: doing small tasks or gathering local information aggregated by technology for larger institutions, against compensation. Crowdfunding models match BoP entrepreneurs without access to traditional finance and investors (the "crowdfunders") looking for small business opportunities. Both models thus directly bring funds to the BoP.

These models, still young, are fine-tuning their value proposition. As they reduce costs of gathering data (or of screening investment opportunities), they should be able to redirect these cost savings towards payments for the service they offer.

The key challenges ahead are the scale up of their back-end for large quantity of information from numerous sources, and the recruitment and on-going motivation of trustworthy "crowd" participants who will source reliable and quality inputs.

Crowdsourcing, including crowdfunding, uses the wisdom and power of the crowd or of a group of individuals to perform a specific task or achieve a given goal. This distributed-problem-solving model is usually conducted via an open call or direct solicitation to the community of interest. Ultimately, crowdsourcing allows a faster delivery of outsourcing assignments (or sourcing of funds in the case of crowdfunding) by splitting them into simplified actions (or smaller investments) performed by the crowd.

This relatively new use of ICT is of particular interest when it comes to meeting the needs of the populations at the BoP, either as the intended beneficiaries of the funding gathered by "crowds" of social investors or funders, or as the "crowd" feeding in BoP-specific information that, in turn, will form the raw-material for BoP-oriented initiatives or businesses.
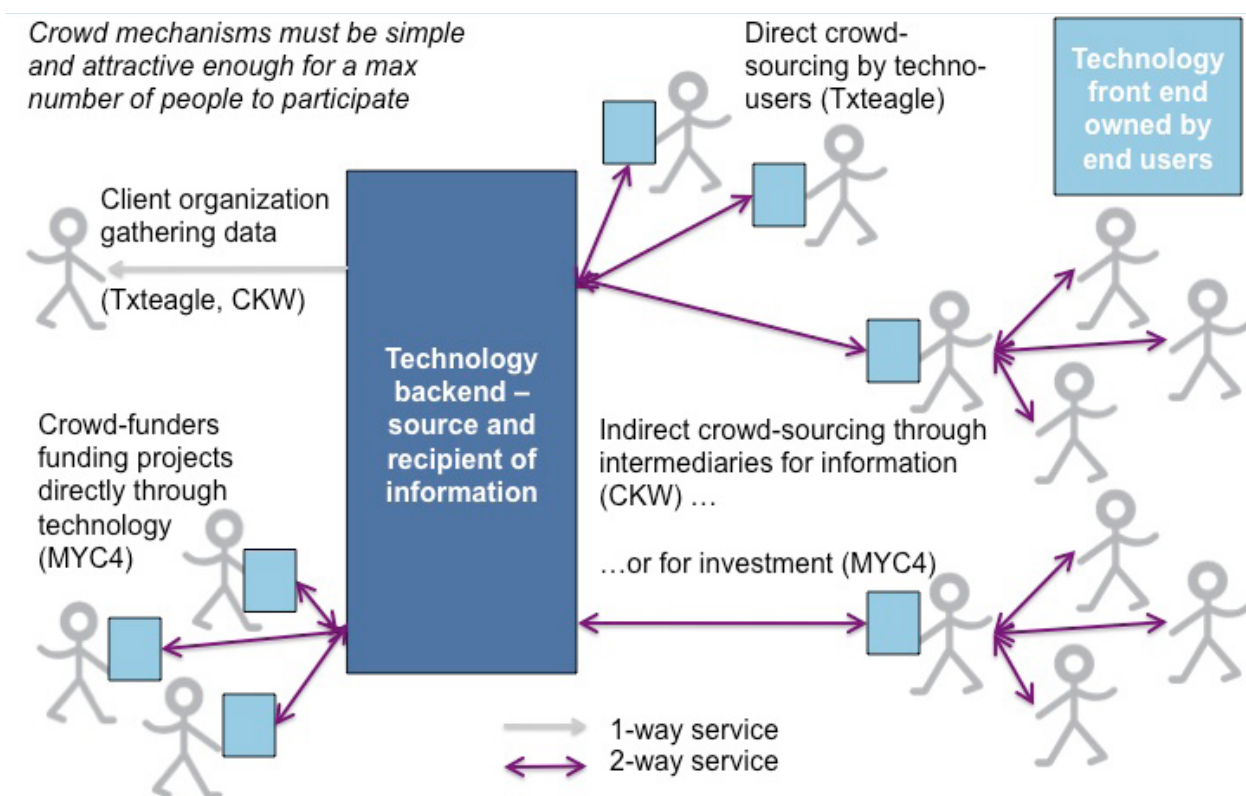
The benefits of crowdsourcing are numerous. Global data and expertise can be leveraged to find new solutions to a problem or collectively design a new product. Solutions and services are created often very quickly at little cost, compared to traditional alternatives for data gathering and sharing. Crowdsourcing opens up a pool of talents, expertise and skills outside a given organization that had up to now proven otherwise impossible to access. Ownership and customer insights on the model are also better ensured as the crowd (i.e. potential customers) itself participates in the solution. These advantages are all the more valuable in the BoP context because, on the one hand, organized information on markets or customer preferences is extremely scarce or inexistent, and, on the other hand, a tremendous creation and contribution potential, calling to take its share in the global value chain, lies untapped.

Considering the advancement of mobile penetration (68% at the end of 2010 in developing countries) and the ever increasing level of digitalization in emerging regions, crowdsourcing services are emerging in the ICT sector in line with the growing potential of Business Process Outsourcing (BPO).

The three case studies provided in this report show different aspects of crowdsourcing in terms of the nature of what is sourced. MYC4 crowdsources funding and investable opportunities: as of January 2011, 18,000

investors from 108 countries had invested almost €13 million in 6,400 businesses of 7 African countries. txteagle now has partnerships with 220 cell phone operators in over 80 countries, potentially reaching a workforce of 2.1 billion people who can perform simple tasks such as gathering local information via mobile phone for a compensation by airtime or money. Finally, part of the CKW value proposition is to provide farmers in Uganda with a turnkey mobile data collection solution that allows them to participate in the crowdsourcing of field surveys for various end-payers.

6.1 Crowdsourcing gathers field data and local inputs otherwise hard to access, while generating income for participants

The penetration of mobile phones and the sheer size of the population at the BoP make mobile phone crowdsourcing an attractive case for emerging markets well leveraged by organizations such as txteagle. While not specifically targeting the BoP, txteagle can send queries and gather information from a pool of 2.1 billion people in over 80 countries, a significant proportion of which belong to the BoP. For clients who order such studies (to date, mainly organizations of the United Nations), crowdsourcing

reduces the cost and time of gathering information and allows the reallocation of resources on activities more directly impacting the BoP. As a matter of fact, there is often no real alternative to this: sending enumerators in a vast number of remote places in the world to gather and treat information timely would most of the time be impractical.

The CKW program aims at expanding its sources beyond phone owners. In order to do this, the crowd of Community Knowledge Workers, (CKWs) is selected by the Grameen Foundation among farmers and entrusted with a smart phone, to collect data from their fellow villagers who do not need to own a device themselves. Once again costs of data collection are reduced for the clients of the study (mainly the World Food Program to date). Additionally, Grameen Foundation asks its CKWs not only to collect data but also to disseminate agro-information to the farmers whom they survey, bringing them previously inaccessible services such as market prices and agro-advices like in the local agent model.[59]

In both cases, participants are compensated for their contribution, creating new revenue opportunities (up to 5% income increase in the txteagle case where any mobile phone owner can participate, and up to 50% in the case of CKW where CKWs are Grameen Foundation franchisees, all BoP). The balance between adequate compensation and cost of sourcing data is evolving, and these figures are likely to change as the above models grow.

Beyond data collection, crowdsourcing can also be used to involve targeted populations in a co-creation process. For example, "It's noon" website is a free and open knowledge-creation digital platform. The website discloses "Creation Call", asking a question about a particular subject on which the network of users is invited to reflect and respond by whichever creative means they find appropriate (audiovisual works, radio shows, podcasts, pictures, illustrations, and written text). Creators of the most compelling works are financially rewarded for their contribution. "It's noon" gives a voice to people who might not have been heard otherwise, and offers a platform to corporations to get insights on people's demand (potentially including the BoP) and let them create products that could become the marketing successes of tomorrow.[60]

Finally, the internet-based crowdfunding system of MYC4 serves two unanswered needs: it taps into the global crowd of individuals who want to invest in small entrepreneurs from emerging countries, and matches them with the financial needs of BoP entrepreneurs. The average loan is of €2,000, at better financial conditions than traditional banks or MFIs. Small entrepreneurs are thus able to expand their businesses and thus their local economic impact. All intermediaries get compensated in the process, as well as investors who receive interest on the funds they provided through MYC4.

Similar matchmaking systems exist for small entrepreneurs looking for advice and investors. VC4Africa for instance aims to connect innovative entrepreneurs (and their ideas) with access to knowledge, markets and capital i.e. mentors, business partners and investors.[61] Some companies and NGOs are also looking into providing similar platforms for larger equity investment. BiD Network, for instance, sources and selects business plans of small and medium sized enterprises in emerging markets.[62] Furthermore, it offers tools to the selected entrepreneurs in order to increase their likelihood of accessing finance. All these models promote new active roles for the BoP in shaping their future.

The depth of penetration of these services at the BoP remains a point of attention to allow larger impact for low-income groups. txteagle constantly works on the simplicity of the user interface to lower the entry barrier for respondents – yet it targets owners of mobile phones and thus does not reach the BoP customers who do not have cellphones. In its current format, MYC4 is not designed to reach the poorest as the average loan is of €2,000. However the selected projects and entrepreneurs portrayed on MYC4 website do have an impact on the BoP. Also, MYC4 can serve cooperatives applying for a joint loan, thus serving several BoP members at once, scaling direct impact. The CKW program targets low-income groups, specifically smallholding farmers, and overcomes the technology barrier by having one local intermediary – the CKW – use the technology to crowdsource information from other farmers in his/her community. Additionally, the fact that the sourcing community (the CKWs) is selected from the BoP makes it more relevant to reach impact in low-income groups. However it is also a major challenge to scale due to the low availability of skilled candidates to be CKWs able to perform the required tasks.

[59] See "Local agent" section p.72
[60] For more information, see www.itsnoon.net
[61] For more information, see vc4africa.biz
[62] For more information see www.bidnetwork.org

ASHOKA FULL ECONOMIC CITIZENSHIP

6.2 Crowd-based innovative business models with relevant impact at the BoP need time to prove sustainable

The business models reviewed are young (started after 2006) and innovative. They have all undergone significant change since inception, showing that they are still in the trial-and-error phase that most BoP projects have to undergo. Their business models are still in the process of proving sustainable.

The money is shared between the program initiator, the "crowd", and technology operators. txteagle and CKW are paid by their clients for a given survey. The "crowd" (participants in the survey) are compensated with airtime or money via mobile operators' network. Finally the partner operators earn new revenues from the use of more airtime (in the form of SMS or data usage, to distribute the study and collect answers, but also from increased usage of participants who now have more airtime to spend). Furthermore, the crowdsourcing service in the CKW program is only one aspect of the business proposition as it is combined with a service delivering agriculture information to farmers. So far this information service has been provided free of cost, but Grameen Foundation is planning to implement a fee for service model. This portfolio of services will generate additional revenues for the CKWs with a goal to ensure both social and financial sustainability.

MYC4 for-profit revenue model is based on a 2% loan closing fee and 6% fee on repayments. Investors – the crowd-funders – earn interest on their investment, determined through a reverse auction ensuring that attractive projects access funds at the best conditions that investors will be willing to grant them.[63] The intermediaries, – i.e. "local providers" who find and evaluate entrepreneurs looking for funds, and "local administrators" who manage repayments – also earn interest (on average 7-8% net return) on the money lent. This results in interest rates above 30% for borrowers, which is competitive with terms that small entrepreneurs get in Africa.

MYC4 expects to break even in 2013-14, txteagle in 2013 and the CKW program (where crowdsourcing is only one part of the value proposition) expects to recover 50% of all costs invested in 3 years' time (versus 10% of expenditures covered by revenues in 2010). The potential is great, but financial sustainability remains to be proven in the coming years.

> " This is a truly new field so no one has the answers, and this is very challenging. We realized we would only find answers through trials and errors."
>
> Tim Vang, Co-Founder of MYC4

6.3 Scale will depend on data quality and reliability, and on finding clients interested in this new approach to the BoP

6.3.1 Technology is a challenge to manage large number of inputs

Scaling organizations relying on crowdsourcing principle implies a back-end system that allows users to easily compile large volumes of data coming from various sources in different countries. Cloud computing is often used to overcome these challenges. MYC4 uses Microsoft.net based platform running on Amazon cloud server, txteagle uses an Amazon server as well, while the CKW program uses cloud-based service servers from Salesforce.com based in the US, with local backup.

6.3.2 Ensuring content quality and quantity is what makes crowdsourcing relevant as a business – it is also the main challenge

One of the key factors that allow crowdsourcing initiatives to grow lies in the quality of the data they source. Selecting reliable crowdsources to get the right data is crucial, and thus so are incentives that motivate members of the crowd or the community to participate and perform. Furthermore, a verification system is required to ensure quality to the clients served. The CKW program provides incentives based on monthly targets with quality control and real-time monitoring of outputs, and consequently CKWs are ranked based on the quality delivered. For data gathering, txteagle has developed an algorithm that asks the first questions on a known topic to verify accuracy of respondents' answers, and decides whether or not to keep them as a source. Both organizations only compensate quality answers, increasing compensation gradually based on quality indicators; and both proceed to immediate compensation through mobile money or free airtime, so that the crowdsourcing member also gains trust in the system that it feeds and keeps motivated over time. Because the crowd of the CKW program goes through a selection process, peer pressure is also a motivating factor to provide quality outputs.

Similarly, if the projects that MYC4 partners source do not repay their loans, partners lose most of their fees (partners can get a maximum of 1/4 of their total fee on disbursement and the rest 3/4 on repayments - they

---

[63] In MYC4 reverse auctions, investors compete to invest in a project: those who offer the best (i.e. lowest) interest rate are those who get the bid and finance a given project, at the rate they accepted.

can also choose to go 0% on disbursement and 100% on repayment, to make them more attractive to MYC4 investors). Partners also sign a risk-sharing agreement covering parts of losses, which further incentivizes them to source quality projects. During its first years of operations, MYC4 compensated its partners at disbursement; with that system over 35% of investors lost money before 2009. Since MYC4 reformed its incentives – and stopped working with some less performing partners – MYC4 has had a positive average return on investment, showing the importance of designing incentives right.

> " We did lots of pilots, spending a year and a half developing the technology. Then we went through trial and error to build an appropriate service, including for the pricing of that service, to determine at what price people would be willing to participate in crowdsourcing."
>
> Nathan Eagle, co-Founder and CEO of txteagle

Adequate incentives and selection process seem to have overcome the challenge of data quality – be it information or reliable investment. Yet today a key challenge faced by all 3 initiatives is to scale up the number of respondents that they have – recruiting community knowledge workers for CKWs, motivating phone owners to register and participate in surveys for txteagle, and identifying more "local providers" to find reliable entrepreneurs looking for funds for MYC4. Achieving a high number of respondents while guaranteeing content quality is ultimately the challenge that every organization in crowdsourcing has to face.

Challenging steps in the value chain of crowdsourcing/ crowdfunding model
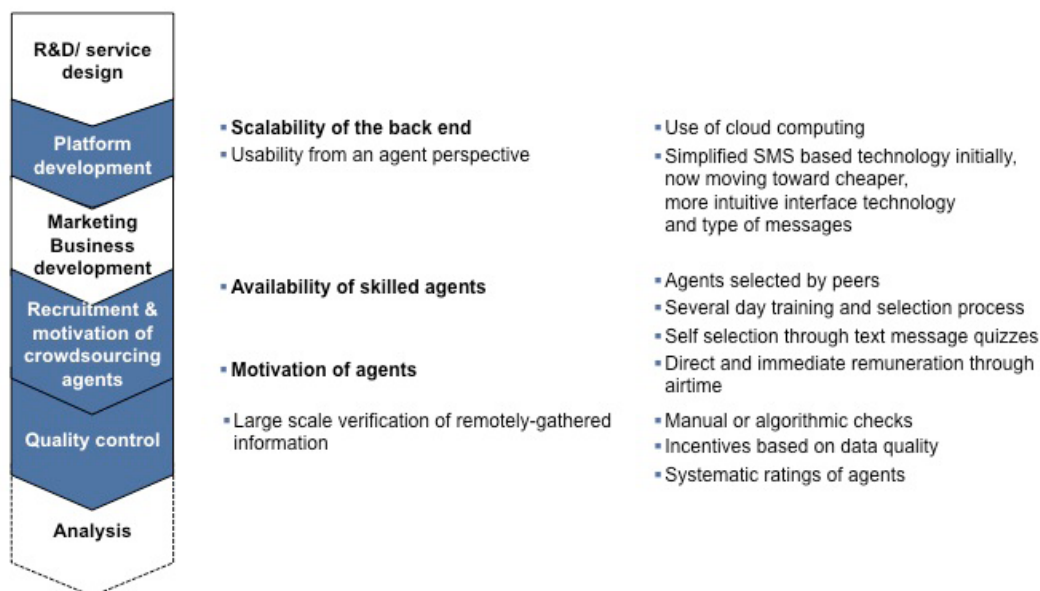
Crowdsourcing and crowdfunding are the most recent ICT-enabled business models. They connect the developed and developing world in a two-way exchange of value and information, the same way Stuart Hart privileges "BoP2.0" strategies to co-create business models with the BoP as opposed to considering them only as potential consumers.[64]

Though none of the models seen here has reached a scale beyond the tens of thousands of beneficiaries yet, hope is that this system will generate value on a large scale soon both for the BoP and for those who will invest in them, either

literally as in the case of MYC4 or invest in their capacity to bring valuable information and services as in the case of txteagle or CKW. To achieve this, projects will need to strike the right balance between contributors' compensation and payers' demand. The millions of dollars of equity raised by txteagle in April 2011 illustrate that the market starts to believe in this opportunity as well.

---

[64] *The Base of the Pyramid Protocol: Toward Next Generation BoP Strategy*, Hart. Hart is the co-author of *The Fortune at the Bottom of the Pyramid* with Prahalad and emphasizes the importance of co-creation with the BoP to set up sustainable business models.

Case study list

Logo	Name	Sector(s)	Page
	Community Knowledge Worker	Agriculture and other economic activities	p.118
	MYC4	Financial services	p.125
	txteagle	Support to economic activities	p.131

Grameen Foundation
Community Knowledge Worker
www.grameenfoundation.applab.org/
section/community-knowledge-worker-project

Improving information flows and knowledge dissemination for 'last mile' small-holder farmers in Uganda

Executive Summary:

- **Organization:** Grameen Foundation (GF), an American private foundation, was founded in 1997 with the objectives to enable the poor, especially the poorest, to help themselves out of poverty. To fulfill this mission it promotes access to finance and information to empower the communities it serves.

- **Project:** Community Knowledge Worker (CKW) program was initiated in 2008 in Uganda to improve the livelihoods of small-holder farmers through a dynamic access to up-to-date agriculture information delivered via mobile phones, via village-base info-mediaries, thus creating income generation opportunity for the info-mediary and the farmers they serve.

- **Innovation:** This project overcomes: 1) the cost issue of owning a mobile phone, 2) trust in information flows, 3) language, 4) literacy, 5) training for complex use cases and 6) 'off-grid' communications, which can prevent farmers from using information services, by setting up local agents (CKWs). They provide a dynamic, two-way information channel, supported by innovative technology such as cloud computing and allowing various types of information to flow (voice, imaging, video, GPS) via smart-phones, which is 30 times cheaper than SMS for similar information size sent. These field agents enable both Grameen Foundation and its partner agricultural organizations to respond quickly to changing needs, to send data from the field to experts and feed recommendations from experts back to farmers to complete the information loop.

- **Sustainability:** Since inception in 2009, CKW has provided agricultural advice to over 19,000 farmers, with a retention rate of 35%, and has provided information to the World Food Program on its farmer beneficiaries. On the financial side, the project is still relying on donor/grant money (only 10% of expenditures in 2010 covered by fees for survey conducted by CKWs and GF services, with a target of over 50% in 3 year's time) but aims at becoming fully self-financed. Scaling will require key partnerships, notably to find more market outcomes for outbound information (survey), to initiate a market for cloud-based information services and to develop a skilled and trusted network of CKWs.

CKW at work

ASHOKA **FULL ECONOMIC CITIZENSHIP**

Project current status

- **Date of creation:** 2009

- **Product / services delivered:** Collection and dissemination of information via mobile devices handled by local agents, to improve the livelihoods of smallholder farmers, linking agricultural research institutes, service providers, private companies and smallholder farmers:
  - 1) Social mobile software service development (outbound), for commodities, weather, crop advice, mobile money, input supplies and to link farmers to value chains
  - 2) Turn-key mobile data collection (survey, inbound data, data validation in the field, analysis and reporting)
  - 3) Field force management through real time monitoring, 2-way communication, and mobile money payment for CKW

- **Benefits to users:**
  - Increased productivity (higher yields or reduced losses)
    - Adoption of improved agronomic techniques, including increased usage of agricultural inputs, such as fertilizers and improved seeds
    - Early detection and treatment of crop and livestock diseases
  - Increased revenues (better price for goods sold) through broadened market access
  - Cost savings/gains realized through improved decision making for crop selection and land utilization
  - Better understanding of farming as a business

- **Customers:** Targeting female farmers and farmers earning under $2/day in Uganda, who should be paying fee for service in the future

- **Clients:** Third parties interested in and paying for information gathered (e.g., World Food Program-WFP)

- **Competitive landscape:**
  - *Substitution before project:*
    - Lack of appropriate incentives and limited monitoring capacity: low levels of extension agent (public) accountability to the farmers they serve
    - Low ratio of farmer extension workers to farmers
    - Disconnect between scientists and farmers
    - Lack of dissemination of knowledge to farmers in rural communities
    - High cost of collecting data (geographic information system)
    - Lack of centralized point to collect and disseminate information from the field
  - *Competition:*
    - None providing field force management and/or comparable agricultural database
    - Other providers of social mobile applications (primarily on application development, not the incubation of social enterprises)
    - Some organizations doing data collection (primarily paper and pencil)

- **Partners involved:** 17 partners currently, including:
  - *MNCs:* MTN-Uganda (for physical and technological infrastructure, brand)
  - *Government:* Uganda's National Agricultural Research Organization (NARO)
  - *CSOs:* Multiple in Uganda (e.g.,SNV)
 - *Aid agencies/others:* IITA (International Institute for Tropical Agriculture) for expert advice

- **Technology aspects:**
  - *At central level:* CKW technology platform allowing 3 core applications and 3 supporting applications:
    - 3 Core Applications:
    - CKW Search: Java-based search and decision trees over MTN mobile internet (GPRS data)
    - CKW Survey: Java-based surveys call CKW Survey over MTN mobile internet (GPRS data) with GPS coordinates
    - CKW Pulse: Java-based two way field force communications channel called 'Pulse' to allow CKWs to track their monthly targets, receive support and receive communications from GF
    - Supporting Applications:
    - National Farmer Database using Salesforce.com (each farmer receives a laminated ID card and each CKW an IMEI/SIM number)
    - SMS conversations (or "ping pong")
    - SMS based 'Farmer Info Channel'
    - Web interface and CMS for GF to access data
  - *At local agent (CKW) level:* Results sent directly to CKW platform by agents using their mobile phones (handset with GPS coordinates, QWERTY keyboard, java-enabled, quality camera, allowing information through Voice, Imaging, Video, GPS)
  - *Data security management:* Farmers registration done through cloud-based service servers (Salesforce. com) based in the US, with local backup
  - *Maintenance:* In-house development, debugging and maintenance of mobile services. IT infrastructure outsourced to telecommunication company

- **Business design:**
  - *Staff recruitment process and capacity building:* GF offer: "business in a box" for CKW:
    - Week long training (enumeration, outbound information, mobile money, etc.)
    - Marketing support (signage, leaflet, vest, local community airtime on radio)
    - Equipment, Maintenance and Support. Technical services, lease phone and charging solution, mobile farming database and 3 core applications.
  - *Marketing:*
    - *Activities conducted, marketing channels and media used:* Part of the business design/business in a box. Advertisement creative brief and planning done by GF, marketing execution via MTN and its existing media partners
    - *Approach to developing customer insights:* Through pilot in 2009, with prototypes and applications tested with users in user-centric design process
    - *Education and awareness:* CKW trained in week-long course. Awareness campaigns utilize MTN marketing channels
    - *Agent motivation (GF to CKW):* Good value proposition of "business in a box" model, including field support and data validation support, online and phone call centre support, initial training (adult education) and refresher trainings, incentives to achieve pre-set targets (same targets for all: 48 outbound agro-tips and 12 surveys per month, with quality control, and payment done according to quality of survey), ranking of CKWs based on evaluation of their surveys
    - *Customer relationship (CKW to farmer):* Peer pressure, status, incentive to ensure their neighbor farms are healthy (disease/pest / weed) spread control, information seen as valued commodity
  - *Distribution:* Through CKWs
  - *Pricing for farmers:* Agro-information: No charge. Surveys: No compensation (but opportunity to get agro information for free). Charging business: Prices set by CKWs, on average $0.12-0.20 per charge (via a connector for multi-devices charging)

- *Cost and revenue split:*
  - *Revenue for CKWs:* From collection/survey data (i.e. for outbound information) and disseminating farming information, paid $10-$30 per month, only for surveys validated by quality control. Additional revenues from charging phones for farmers. No revenue share between GF and CKWs, just partial cost recovery for GF to pay for smart-phone and insurance. Future plan: revenues from selling airtime
  - *Revenue for CKW initiative/GF:* Paid on total volume and quality of delivery by survey clients
  - *Data cost:* Limited by using data on smartphone, 30 times cheaper than SMS messages
- *CKW payment:* Transfer of mobile money

- **Monitoring and impact measurement:** Internal: On-going registrations of farmers, with identity, personal information and information on crops registered. Head-up dashboard for real-time improvement of processes on Salesforce.com. External: Not measured yet, first impact assessment planned in 2012. Each farmer is measured with a Poverty Scorecard.

- **Awards:** Saleforce.com award

- **Future plans and next steps:**
  - Expand Community Knowledge Worker Initiative across Uganda with 1.5k CKWs before 2013 serving 1m people in Uganda (plans for 4 year grant by Bill and Melinda Gates Foundation awarded in 2009)
  - Replicate in other Foundation Labs countries (Ghana, Indonesia) and beyond
  - Modify business model towards B2B concept: fee for service, selling information to World Food Program and/or national authorities, field force automation and business process outsourcing (e.g. call centre)
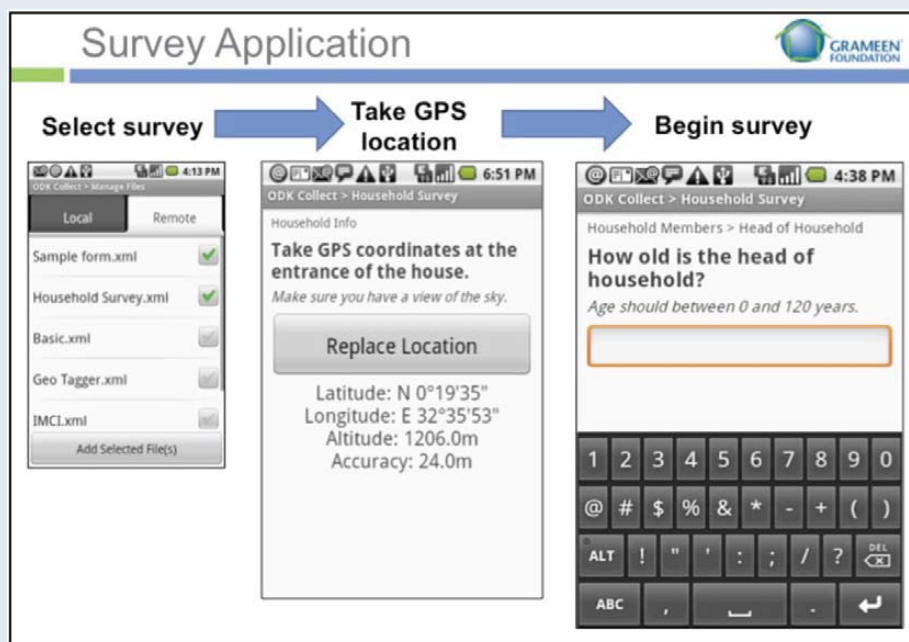
Survey application interface for CKW

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

▪ **Problem magnitude:**
- Five-fold increase in African population over last 60 years
- 80% of labor force in agricultural sector in Uganda, source of livelihood for more than 85% of population
- 94% of agricultural production on smallholder plots, including most food production

▪ **Solution provided:**
- *Quality:* Flexible, innovative, open source technology (except Salesforce), in the cloud, feature rich
- *Comprehensiveness:* Only providing information and advice, with direct action on physical value chain e.g. WFP warehouse tenders via the Farmer Info Channel

▪ **Scale and reach:**
- 300 CKWs in 6 districts
- 10k farmers registered

▪ **Acceptance and usage:**
- *Acceptability:* Proved by 53 % of farmers coming back
- *Usability for farmers:* Overcoming literacy and high mobile cost barrier through CKW
- *Usability for CKWs:* Ease of use: Large touch screen + qwerty. Co-creation of applications with CKWs and farmers

▪ **Socio-economic impact:** Not measured yet, first impact assessment planned in 2012. Self reported adoption surveys to be conducted in 2011. So far anecdotal evidence:
- *For CKWs:* Income increase: "I saved that money. I want to buy a cow."
- *For farmers:* "Farmers do act on the information they receive from CKWs. These behavioral shifts lead to impact over time"

▪ **Environmental impact:** Not mentioned

2/ ECONOMICALLY SUSTAINABLE?

▪ **At BoP end-user level:**
- *Initial cost:* None
- *Cost of service:* None so far, but plans of fee for service
- *Average household income for target beneficiaries:* $400-800/year

▪ **At intermediary level (CKW):**
- *Initial cost:* None upfront for CKW. Cost of "business in a box" kit: $500 (half recovered by GF by levying fees on CKWs salaries paid via mobile money)
- *New income opportunity:* Salary before becoming CKW: $1-2 /day ("poor serving the poor"). With charging business: $1 more per day. With income from surveys: 1$ more per day

▪ **At third party level** (clients purchasing information):
- *Cost of services:* $4-5 per survey
- *Cost of best alternative:* $6-10 per paper and pencil survey

▪ **At project level:**
  • *Budget:* Roughly $1m yearly expenditure (30 staff, 300 CKWs)
  • *Cost recovery level: 1*0% budget recovery in 2010 (first year of operations)
  • *Future revenue sources:* Plans for 40% revenue from data collection, 60% from fee for service, and 50% recovery equipment recovery (CAPEX) in 3 years
  • *Initial funding:* Bill and Melinda Gates Foundation donation in 2009 of $4.7m

3/ SCALABLE AND REPLICABLE?

▪ **Requirements/ pre-requisites for the project to scale:**
  • Proving the case towards the government to get a buy in
  • Using appropriate choice of technology (open source, in the cloud)
  • Partnering with more large farmer organizations to ensure relevant context and market linkages
  • Deepening partnership (already 17 partners in place) and finding additional partners with technology oriented mind-set but also streamlining relationship
  • Raising equity investment to scale up on a market-based model

▪ **Additional requirements/ pre-requisites for the project to replicate:**
  • Developing a country organization, with a strong skill-set, competence, experience and passion for development
  • Finding committed partner organizations with deep collaboration

Advertisement on CKW weather service

THE PEOPLE

STORY OF THE ENTREPRENEUR

Sean, currently Kampala-based, is a results-driven social entrepreneur with over 12 years of international telecommunications and internet experience in strategy, business development, brand marketing, government liaison and product development roles.

He has managed budgets of up to €30m, led large teams/networks of over 150 professionals, driven stakeholder relations at the highest level and successfully delivered several key web and mobile product development projects.

He is passionate about the role of mobile communications in serving Base of the Pyramid consumers and currently leads AppLab Uganda and the Communication Knowledge Worker Program in Uganda. He previously led Nokia Life Tools business development in Middle East and Africa as Head of Emerging Markets Services in the region.

Sean is a graduate in the Class of 2009 from the TRIUM (LSE, NYU Stern, HEC Paris) GEMBA program which currently ranks 3rd in the FT global business education rankings.

INTERVIEW WITH SEAN PAAVO KREPP, UGANDA COUNTRY DIRECTOR AND PROGRAM MANAGER, APPLAB AND CKW INITIATIVES

▪ "What are the 3 key challenges you face or have faced?
1) To seek more investment to scale as a market-based social enterprise such as what PT Ruma did in Indonesia. PT Ruma is structured as a social enterprise (selling phone kits to BoP women who resell airtime) with convertible debt but a capped upside for the management and investors. Social and financial performances are built into the articles of incorporation. Grameen Foundation will be looking at its scaling and exit strategy this year, which means that we will be approaching impact investors, etc. in FY2011.
2) To partner with large farmer organization to ensure relevant context and market linkages.
3) To prove our case towards the government and get a buy in.

▪ Why has your model not taken up the world yet?
The case still needs to be scaled in Uganda.

▪ What is the main policy or institutional change that would help your project grow?
We are aiming to work with NAADS, the national agricultural extension agency. This will greatly help the sustainability, scale and potential impact of the project.

▪ What is the main internal capacity or resource that would help your project grow?
A larger tech team with skills in Salesforce and other relevant software. Also adult education and field force management skills.

▪ What is the top one wish you would have that would help your project grow?
The top wish would be to have deeper partnership. GF/CKW has currently 17 partners. More could be added with a technology-oriented mindset."

Sources:
Interview with Sean Paavo Krepp on January 13th, 2011, and meeting on March 1st, 2011
Community Knowledge Worker Pilot Report, 2010

The difference a CKW makes, Lydia Namubiru, Grameen Foundation blog, Available at:
grameenfoundation.wordpress.com/2011/03/21/the-difference-a-ckw-makes/

Contact person for the project:
Paavo Krepp Sean, Country Director Uganda at Grameen Foundation

Financing African entrepreneurs through the web

Executive Summary:

▪ **Organization:** MYC4 is a for-profit joint venture between entrepreneur Tim Vang and Mads Kjaer from Kjaer Group (Danish provider of transport solutions worldwide for humanitarian organizations). Based in Copenhagen, Denmark, with a regional office in Nairobi, Kenya, its mission is to fight poverty.

▪ **Project:** MYC4 directly connects individuals, institutional investors, etc. with African entrepreneurs who need capital to develop their business. Today, 18,000 investors from 108 countries have invested almost €13 million in 6,400 businesses in 7 African countries through MYC4.

▪ **Innovation:** MYC4 is the first for-profit P2P micro-lending organization offering interest to lenders and designed to be self-financed; this business model and MYC4 emphasis on transparency, make it a unique proposition. As stated on their website: "It's not charity. It's business, and it's helping."

▪ **Sustainability:** MYC4 has become an important player in the microfinance sector. It is 10 times smaller than its non-profit competitor Kiva ($170 million invested) launched 2 years earlier, but is fully market-based. Designed to become self-financing thanks to a 6% commission on each loan as well as a 2% closing fee, MYC4 has adjusted its operating model and partner selection process to scale up more rapidly and break even in 2013-2014.

We all need gas and diesel, and this woman in Nairobi bought this filling station with money funneled through MYC4

Chicken farming is on the rise in Kenya. This woman is expanding her chicken farm outside Nairobi thanks to a loan from MYC4

Project current status

- **Date of creation:** Created in 2006, public launch in October 2007

- **Service delivered and related benefits:** A web-based P2P lending platform which:
  - Provides lenders with new markets to realize investments with ROI higher than inflation
  - Allows MFIs to better serve their clients
  - Increases access to capital for SMEs (loans between €0.1k and €100k, in 2009: 1.7k loans funded)

- **Customers:**
  - *Borrowers:* > 6.4k businesses from entrepreneurs who own SMEs but lack access to growth finance, referred to as "the missing middle" (between large companies and individuals) by MYC4
  - *Lenders:* >18k individuals, financial institutions, pension funds and companies in developed countries since inception. 4k active accounts today

- **Competitive landscape:**
  - *Substitution before project:* No substitution for this segment (loans too large for MFIs and too small for banks)
  - *Competition on the lender side:* Non-profit P2P lending platforms such as Kiva, UnitedProsperity.org, MobileMovement

- **Partners involved:**
  - "Local Providers" (usually MFIs): Screen businesses looking for loans
  - "Local Administrators" (usually financial institutions, including MFIs): Handle financial transactions. Initially need for MYC4 to reach out to Tier 4 (smallest) MFIs, today directly contacted by larger organizations
  - Coop (largest supermarket chain in Denmark): Provide possibility to invest in producers (from developing countries) of goods purchased in two ways: 1) COOP investing percentage of goods' purchase price in producers or 2) direct customer investment through MYC4 platform (through advertisement in supermarkets)

- **Technology aspects:**
  - *At central level:* Microsoft.net based platform run on Amazon cloud server
  - *At lender and local partner level:* Computer with internet access, with browser Firefox 2 on Windows operating systems and MAC OS, and Internet Explorer 7 on Windows operating systems
  - *Training needed for local partners:* Training on MYC4 systems and data management by local training coordinator
  - *Data security management:* Hosted by Amazon
  - *Website and server maintenance:* In-house at first, moved to Uganda in 2007, moved back to Copenhagen in 2009 to reduce errors and collaboration difficulties

- **Business design:**
  - *Staff recruitment process and capacity building:* Providers selected through due diligence process; capacity building program to help Providers better manage loans (with limited impact according to MYC4)
  - *Marketing:*
    - Few marketing efforts since 2009: Focus on improving business model before scaling up
    - Film "Learn about MYC4" in 2009
    - Key strategy: Transparency
    - Focus on financial returns, not just projects to attract investors
  - *Distribution:* 17 providers (6 active) and 16 loan administrators (7 active)

- *Accountability and transparency measures:*
  - Costs of bankruptcy of MISCOCI Insurance Scheme in Ivory Coast covered by MYC4 (€0.5m in 2009)
  - Investor funds kept separate from MYC4 funds, on escrow account owned by independent entity 'MYC4 Foundation' (contrary to most other P2P lending platforms)
- *Pricing:* Interest rates for lenders determined through reverse auction system for each bid (average: 12.7% annually in Euros including currency risk)
- *Average loan size:* €2k per SME. Average investment: €0.4k per investor
- *Revenue model:* based on transaction fees charged to cover OPEX:
  - In the beginning: 2% fee at loan disbursement and 2% at repayment
  - Since July 2009: 6% interest rate (declining balance, i.e. 3% flat rate) at repayment
  - Since February 2011: 2% closing fee on all loans
  - Risk sharing agreement with the partners covering part of losses
  - €1 fee for accounts not used in over one year to incentivize investors
- *Payment:*
  - *Borrowers to MFI:* Flexible process allowing reimbursement when borrowers can and not on regular basis, with additional fee for late repayment
  - *MFI to MYC4:* Once or twice a week
  - *MYC4 to lenders:* Money transferred back to lenders immediately after MFI repayment through Quickpay (small fee) or bank transfer
- *Administrator and provider financing:* Different for each entity: Fee when loan disbursed and/or interest paid only if loans repaid

- **Regulatory aspects:** Legal aspects of loans managed by administrators

- **Monitoring and impact measurement:** Committed to transparency, still debating best methodology to implement impact measurement, today measuring number of direct and related beneficiaries with an Impact Score Tool

- **Awards:**
  - E-commerce Award from Association of Internet and Distance Trade in category 'best financial e-commerce' in 2008
  - Freedom Award from Danish Liberal Party Venstre
  - MDG3 Torch from Danish Minister for Development Cooperation
  - Award for "Powerfully Simple User Experience" from Microsoft Development Center

- **Future plans and next steps:**
  - Further expansion to more African countries; also looking to expand in India and Latin America at a later stage
  - Development of mobile banking for repayments with possibility of piggybacking on other programs (M-PESA for example)
  - Modification of fee structure (increased fees)
  - Risk limitation (risk of the overall portfolio in 2009: 44%) through improvement of due diligence processes, portfolio diversification (max 30% for each country, max 20% for each partner), and modification of partners' fee structure to incentivize repayments (25% on disbursement and 75% on repayment)
  - Development of new services: Equity or minute loans (loan available within minutes to enable small entrepreneurs to take time-limited opportunities, e.g. boy wanting to sell water at traffic jam)

HYSTRA
hybrid strategies consulting

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** No access to capital at reasonable rate for SMEs (need for loans larger than those of traditional MFIs, in areas without traditional banks)

- **Solution provided:**
  - *Tool quality:* Flexible, scalable (higher fee for higher traffic without capacity limit on Amazon cloud server, code optimized to run on larger scale)
  - *Service quality and comprehensiveness:* only providing funds to MFIs, no related services such as capacity building for SMEs

- **Scale and reach:**
  - 6 active loan providers and 7 active loan administrators
  - >18k investors reaching > 6.4k owners since inception. 4k active accounts
  - Website visited >735k times by >199k unique visitors from 201 countries; each thread on forum read on average 520 times in 2009
  - *Growth:*
    - Dec. 2007: 0.5k loans from 2.5k investors worth > €300k
    - Oct. 2008: 3k loans from 6.8k investors worth > €5m
    - Dec. 2010: 5.4k loans from >18k investors worth > €12m

- **Acceptance and usage:**
  - *Acceptability:* Good portfolio results (default rate: 2%) since 2009, attracting larger local partners
  - *Usability:* Efforts in 2009 to improve web platform usability

- **Socio-economic impact:**
  - >100k beneficiaries (borrowers, their employees and families)

- **Environmental impact:**
  - Inspired by the 'triple bottom line'
  - Not measured

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP borrower level:**
  - *Initial cost:* No subscription fee
  - *Direct cost of service:* Interest rate (average: 39% including all fees and costs of intermediaries)
  - *Average borrower net income:* From €350 to €750 a month*
  - *New income opportunities:* Directly generating new income opportunities for BoP (with only 2% default mid 2008-2011)
  - *Affordability:* Not designed to reach the poorest (average loan €2k)

- **At lender level:**
  - *Initial cost:* No subscription fee
  - *Service cost:* Bearing risk of default and currency fluctuation (early investors lost on average 35%)

- *Revenues:* Interest rate (average 12.7% in euro, including currency risk)
- *Average ROI on all loans:* by year end 2009: minus 9.5%. Since mid 2009: small positive return

- **At local providers and administrators level:**
- *Initial cost:* No license fee
- *Service cost:* Bearing cost of due diligence and project presentation on MYC4 website
- *New income opportunities:* Fee and/or interest charged to borrowers if loans disbursed (average net return: 7-8%)

- **At project level:**
- *Total number of people employed:* 7
- *2010 results:* Income €50k and expenses more than €1m
- *Breakeven:* Expected in 2013-2014. In 2010, not yet covering OPEX
- *Initial funding:* Seed capital: €200k from personal funds and Kjaer Group; start-up grant from the Danish Government of €670k in December 2006
- *Ongoing funding:* Income, issuance of shares, grants (DOEN: €75k, Hivos: €239k, FMO: €85.5k, Morgan Stanly/King Baudouin Foundation: €73k, Government of Luxembourg via European Investment Bank: €350k)

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
- Identifying accountable Providers and Administrators: 1st partners (Foundation for Entrepreneurship Development in Uganda and Capital Micro Credit) founded to help MYC4 source first borrowers and start operations
- Ending collaboration with weakest Providers and Administrators
- Innovative software technology to bring costs down
- Marketing campaign to attract investors

- **Additional requirements/ pre-requisites for the project to replicate:**
- Strong technological platform
- Existence of potential partners capable of finding entrepreneurs
- Presence of entrepreneurs in all sectors in need of loans
- Favorable economic environment (floating economy, currency risk)
- Stable political environment (no business in case of security issues)
- Sufficient connectivity and low cost broadband solutions

MYC4 recently teamed up with Kenyan "Makao Mashinani", experts on low-cost housing, to get children like these out of the slums and into some decent housing

Founder and CEO of MYC4, Mads Kjær, at the partner conference in Nairobi January 2011

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF MY4C AND THE ENTREPRENEUR

INTERVIEW WITH TIM VANG, CO-FOUNDER

The story begins in a London taxi in 2004, when Mads Kjaer and Tim Vang have their first conversation about what would become MYC4.

Tim Vang: "When we met it was like two soul mates meeting. (…) This taxi ride was fundamental to the future business! The three words we discussed were 'people', 'entrepreneurship', and 'innovation'. Mads then added the words 'a greater world' and 'Africa' and I put in 'internet'.[65]

Tim Vang and Mads Kjaers launched their first concept "Care 4 Expats" in 2005, an online platform supporting expatriates moving to Africa by connecting them with other expats and providing them with local advice. Using the website generated a commission used to pay the OPEX; any surplus could be donated by the users to an African micro-entrepreneur of their choice. In the end, users found the idea of supporting African entrepreneurs much more exciting than the expatriate online community.

This is how "Care 4 Expats" evolved into MYC4 in 2006. The inspiration for MYC4 came primarily from eBay's platform.

Tim Vang
Tim Vang is a serial entrepreneur. He holds a master degree in international marketing and Management from Copenhagen Business School. Before MYC4, he worked as a leadership coach in Denmark. He now sits in several Boards of Directors.

Exchange rate considered for this study (as of 2011/01/04): 1DKK = 0.1342€

- "What are the 3 key challenges you have faced while trying to scale up?
1) Funding (equity capital to work with). 2) Cracking the nut in Africa, i.e. how to find enough businesses that are actually scalable. 3) Crowdfunding is a truly new field so no one has the answers, and this is very challenging. No one has tried to do this; we realized we would only find answers through trials and errors.
- What are the 3 key features of MYC4 that make it unique?
1) The whole ecosystem is for profit, borrowers, partners, MYC4 and investors. Everybody should be able to make a profit. SMEs in Africa has a problem raising capital and MYC4 will provide that for a profit; 2) Transparency: nobody is talking about the real cost of capital. We believe in radical transparency. 3) We connect African entrepreneurs with financial access and export possibilities to the developed world.
- What is the top one wish you would have that would help your project grow?
Get the right partners that know the path and can invest the capital. Thus a two sided answer: get the right funding partners on board (strong within financial services) and strong technology partner (so that we can get in the championship league of financing). We need a partner to assist us in hedging, credit and risk. With our current capacity we can grow by a factor 3-5 but not by 50 or 100."

[65] *Hystra analysis based on a sample of 60 projects funded by MYC4*

Sources:
Interview with Tim Vang, co-founder, on January 10, 2011 and February 9, 2011
http://www.MYC4.com
http://www.youtube.com/watch?v=V005L3PWhSE
Kiva versus MYC4: Business Model Innovation in Social Lending, CARRICK-CAGNA Anne-Marie, SANTOS Filipe, 06/2009-5595
MYC4 A/S Annual Report, 2009

Contact persons for the project:
Kjaer Mads, CEO and co-founder: mads@MYC4.com
Vang Tim, co-founder: tim@MYC4.com

Mobile Surveys and Targeted Offers
in Emerging Markets

Executive Summary:

- **Organization:** txteagle is a multi-million dollar technology start-up co-founded by two Americans with a passion for IT and development.

- **Project:** Launched in 2009, txteagle now has partnerships with 220 cell phone operators in over 80 countries, reaching 2.1 billion people who can perform simple tasks such as gathering local information via mobile phone while being compensated by airtime or money.

- **Innovation:** The key innovation of txteagle's system is the ability to credit mobile phone subscribers with small denominations of airtime in exchange for completing surveys or purchasing products. Technology-wise, the assets of txteagle are 1) being based exclusively in the cloud, with no need for physical presence in countries where it partners with operators, 2) compensation engines within the back-end billing systems of mobile operator partners, 3) Universal Cellular Messaging Protocol (UCMP) to enable interactive messaging to any of the 2.1 billion potential subscribers.

- **Sustainability:** Within two years, txteagle has managed to build a robust technology platform potentially reaching and empowering the next billion consumers. The business model brings economic benefits to all stakeholders, i.e. to respondents in the form of free airtime, to clients saving money compared to conducting traditional surveys for information, and to mobile operators increasing airtime use. In early May 2011, txteagle raised $8.5 million in Series A round from a consortium of investors led by Spark Capital. Fine-tuning its revenue structure, finding large-scale clients and opening its platform to smaller data requests through a web interface will be the next decisive steps for txteagle to prove it can reach the scale and impact it is now well placed to achieve.

Request for crowdsourced information…

…And subsequent payment

Project current status

- **Date of creation:** 2009 with pilots, first large scale client (UN affiliate GNDR) in 2010

- **Product / service delivered:** Cloud targeted offer platform centralizing information queried to and gathered from local people in emerging markets via mobile phones

- **Benefits:**
  - *For people in emerging markets:* Compensation (with airtime or money) for participation
  - *For phone operator partners:* Additional airtime spent on answering queries and from airtime earned by respondents
  - *For contracting clients:* Access to global and nearly instantaneous accurate information at lower costs than through traditional field research

- **Clients:** Entities (ad agencies, market research firms, global brands, NGOs, international institutions) willing to gather local information or perform simple tasks requiring local knowledge from emerging countries

- **End-user/ beneficiaries at BoP level:** Anyone with a mobile phone who participates in the surveys

- **Competitive landscape:**
  - *Substitution before project:* Field research and face to face interviews (10-100 times more expensive, 5-10 times longer to gather similar data - still needed for research in zones without mobile access or for more complicated questionnaires)
  - *Competition:* None with similar scale and reach. Many data collection or awareness projects, most limited to one type of use and organization (CKW for farming information in Uganda, health data gathering by health workers in various countries, project Masiluleke on HIV Aids awareness in South Africa…).

- **Partners involved:**
  - 220 phone operators (txteagle compensation platform integrated in their billing system)
  - Investors (~10M in total capital raised to date): Spark Capital, RBC Venture Partners, Qualcomm Ventures (in addition to $100k prize seed funding), Flywheel Ventures, Esther Dyson

- **Technology aspects:**
  - *At central level:* Server gathering information in Boston, verifying accuracy through proprietary management algorithm
  - *At local level:* Participants transmitting data for free through UCMP on mobile phones. Payment in airtime or mobile money in countries where available
  - *Data flow:* Unlimited, using Amazon servers
  - *Training needed:* None for simple queries, not needed to date
  - *Data security management:* Using Amazon servers

- **Business design:**
  - *Respondent's registration:* Pre-screener survey asking phone users if they want to earn airtime through surveys. Answer "no": not contacted again. Answer "yes": asked to enter demographic information to be able to participate
  - *Respondent's incentive and trust building:* Small amount of airtime transferred at first contact to convince respondent of authenticity of offer
  - *Data accuracy verification:* For opinion surveys: no verification. For data gathering: first questions asked on known topic, to verify accuracy of respondent's answer
  - *Feedback loop:* Constantly improving queries format (wording, etc.) to increase response rates and lower survey drop out rates

- *Pricing:* Starting at lowest possible compensation. If not gathering enough answers, raising price until sufficient number of respondents participate
- *Payment, cost and revenue split:* txteagle paid by client for the study done; operators earning new revenues from more airtime used; study participant compensated with airtime or money (including reimbursement of cost of SMS used for surveys, if relevant) sent via mobile operators' network

▪ **Regulatory aspects:** No issues faced to date (in particular no employment tax issue as txteagle is not employing its respondent but only incentivizing them with airtime)

▪ **Monitoring and impact measurement:** Only measuring direct metrics so far, such as money disbursed to respondents. No other impact measurement

▪ **Awards:** Qualcomm QPrize Finalist 2009 (business plan competition)

▪ **Future plans and next steps:**
- Extend partnerships to reach 3bn users in 120 countries by end 2011
- Increase registration of potential respondents
- Create scalable web platform and automate service to make small scale surveys financially viable, to serve smaller clients such as NGOs and companies requiring local information (expected service launch in September 2011)
- Launch own commercial research projects to create unmatched global database

Farmer participating in crowdsourcing in Kenya

HYSTRA
hybrid strategies consulting

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** *For clients:* Difficult to get accurate, up-to-date information on emerging markets. *For BoP:* Lack of economic opportunities and inclusion in global economy

- **Solution provided:**
  - *Quality:* Robust system leveraging existing technologies: queries and answers through basic mobile phones, payment system through airtime or money transfers when available
  - *Comprehensiveness:* Processing simple text questions (up to 30 question queries so far) and possibly pictures. Not designed to handle more complicated queries which would require a computer

- **Scale and reach: First 2 years of operation:**
  - 2.1bn users attainable in 80 countries via 220 operators
  - 100k respondents registered
  - 40k respondents compensated in 49 countries

- **Acceptance and usage:**
  - Use of SMS, widely known and accepted
  - On 10 question surveys: low drop out rate (most respondents starting it, finish it)

- **Socio-economic impact:**
  - Cost of surveys in emerging countries distributed to local respondents rather than third parties performing the studies

- **Environmental impact:**
  - Not targeted
  - *Energy savings:* Anecdotal: Avoiding motorized access to remote areas to perform local surveys

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Initial cost:* Access to mobile phone
  - *Registration cost:* None
  - *New income opportunity:* Compensated $0.50-1.00 for 30 questions (5-30 minute job), representing potentially up to 5% income increase [66]
  - *Reach:* Only mobile phone owners, i.e. not the poorest

- **At client level:** Survey done at fraction of cost, in fraction of time of traditional field surveys

- **At project level:**
  - *Staff:* 6 engineers and management team based in Boston
  - *2010 revenues:* ~ $750,000 booked
  - *Profit margin:* Variable depending on projects. Lower for opinion surveys than for data gathering projects
  - *Breakeven:* Planned in 2013

[66] *Respondents typically spend 10% of their income on airtime. txteagle hopes to compensate half of that amount each year, effectively freeing up 5% of income for other purposes*

- *Initial funding:* 2009: $100k seed (QPrize business plan competition)
- *Equity investments:*
  - 2010: >$1m
  - 2011: $8.5m

3/ SCALABLE AND REPLICABLE?

▪ **Requirements/ pre-requisites for the project to scale:**
- Partnerships with operators world-wide
- Robust central technology platform accepting high data debit
- Solutions to better engage more respondents to register
- Simple query method for more respondents to do full questionnaires without dropping out

▪ **Additional requirements/ pre-requisites for the project to replicate:** N/A

HYSTRA
hybrid strategies consulting

THE PEOPLE

STORY OF THE ENTREPRENEUR

After graduating from Stanford and MIT, Nathan Eagle got a Fulbright Scholarship to teach mobile-phone programming at the University of Nairobi. While he was in the village of Kilifi, he got his "aha moment" when asked for the second time in a few months to provide his blood for transfusion after an accident he had witnessed. Indeed the local district hospital in Kilifi never had enough blood for transfusions. "So we built a system for the nurses to send short, daily text messages from mobile phones to the centralized blood bank to avoid shortages", Eagle said. But the system had limited success, as the nurses were reluctant to spend their own prepaid airtime on SMS to the blood bank. Eagle modified the program to reimburse the nurses for each SMS.

"Once they were compensated, the nurses became eager to report blood supply levels," Eagle said. "That's when I started thinking about what other types of tasks could be done through mobile phones with automatic compensation." And txteagle started in 2008. "txteagle was born with the idea that we could tap into the 1 trillion dollar outsourcing market. However outsourcing at that scale runs the risk of bringing wages down globally. Thus txteagle is now meant to crowd-source jobs that by nature cannot be outsourced somewhere else, such as local polls, surveys, and impact monitoring. "

INTERVIEW WITH NATHAN EAGLE, CO-FOUNDER AND CEO

- "Why are you doing all this?
  Our billion target subscribers spend 10% of their annual income on airtime, we have a mechanism to deliver instant economic empowerment on an unprecedented scale.
- What are the 3 key challenges you have faced?
  Interacting with all different operators, building out a database that can scale to a billion people with an adequate technology platform. It took us a year and a half to get the right technology!
- Why has your model not taken over the world yet?
  We are too young! Ask me this question again in ten years…
- What is the main internal capacity or resource that would help your project grow?
  We need to create a scalable web front-end to allow everyone to use our system even for small scale surveys. We also need a substantial sales team to sell this platform to large multinational corporations.
- What is the top one wish you would have that would help your project grow?
  Spreading the world! We need to let institutions know that they have a better way of engaging with next billion consumers."

Sources:

Phone interview with Nathan Eagle, CEO, January 19, 2011

Nathan Eagle's conference at the World Bank, Washington DC, December 9, 2010

txteagle website: www.txteagle.com

"Crowdsourcing Jobs to a Worldwide Mobile Workforce", Technology Review, November 24 2010, Available at: www.technologyreview.com/business/26651/?p1=A5

"txteagle raises$8.5 Million To Give 2.1 Billion A Voice", TechCrunch, April 12 2011, Available at: techcrunch.com/2011/04/12/txteagle-raises-8-5-million/

"txteagle takes outsourcing to cell phones", New Mexico Business Weekly, April 18 2010, Available at: www.bizjournals.com/albuquerque/stories/2010/04/19/story5.html

"Virtual Outsourcing, Mobile Work: A way to earn money by texting", The Economist, October 28 2010, Available at: www.economist.com/node/17366137

Contact person for the project:
Nathan Eagle, CEO: nathan@txteagle.com

The diversity of crowdources: examples of txteagle users
Dress-seller

Security guards

7. Financial services

Summary

Financial services offered via ICT can either be a substitute to existing practices (e.g. mobile money transfers replacing physical money transfers, or loan repayments through cards at point of transactions instead of in-person payments) or an entirely new practice for unbanked populations (e.g. life insurance, or "meso-loans" for social entrepreneurs). In both cases they require a robust secured platform and either local agents to sell the service initially and manage the cash, or/ and a direct interface between technology and end-users. They must create trust in the technology and - when agents are needed - in the agents, for example by leveraging existing trusted networks such as airtime resellers or post office agents.

The business models seen tap into various (and generally multiple) sources of revenues: from government for social transfers channeled more efficiently via mobile phones or small shops equipped with IT, to insurance companies for the sale of new micro-insurance products to the BoP, to telecommunication operators when the service increases their customer retention, to end-users via fees on their financial operations. They avoid however charging flat subscription or service fees.

Moving forward, existing initiatives that use agents will need to densify and better secure their agent network to make their offer easily accessible to all. This implies often first to piggyback on existing networks, then to create new ones for a second step of expansion, as well as to improve cash management to avoid that these agents bear the risks of carrying cash that their clients now avoid. Governments can play a large role in promoting such services through explicit policy support or even by using these services for their social transfers, while companies launching these initiatives should be aware that they will need to invest both in increasing financial literacy to sell complex services such as insurance, and in sustaining customer relationship to maintain users active.

A key development challenge addressed through ICT is the lack of access to financial services through traditional means for the BoP. The costs of traditional banking models, added to geographical barriers and cultural or education challenges preventing the BoP from using formal banking branches, have resulted in a large "unbanked" sector that lives in primarily cash economies with limited income. High fees, application processes and minimum balance requirements create insurmountable barriers for BoP to engage in traditional banking, while the small size of individual transactions make the cost of providing services unattractive for many banks. Microfinance institutions, without having a fully fledged banking licence, have partly addressed this issue by creating small branches, and by using less robust hardware and software than banks, allowing them to serve poorer populations. Yet in 2008 they only served 100 million borrowers, still leaving an estimated 2.5 billion adults primarily in Latin America, Asia, Africa and the Middle East without access to financial services.[67] Of these, at least one billion people own a mobile phone. The market potential for mobile banking (m-banking) alone is therefore significant, estimated at operating income levels for banks in the several billion dollars per year.[68] Today according to GSMA, m-banking counts more than 42 million users (13 million for M-PESA alone), while other branchless banking solutions must account for at least another 50 million people (28 million for FINO alone).[69]

---

[67] For number of MFI borrowers, see How Many MFIs and Borrowers Exist? Updated Dec, 2008, Microfinance Information exchange, available at www.themix.org/publications/microbanking-bulletin/2008/12/how-many-mfis-and-borrowers-exist-updated-dec-2008

[68] Capturing the promise of mobile banking in emerging markets, McKinsey and Company, 2009

[69] GSMA Mobile Money Deployment Tracker, 2010

ASHOKA FULL ECONOMIC CITIZENSHIP

For many people in emerging countries, ICT-enabled banking solutions are not simply "additive" as in developed country where transferring money on the internet, for example, is a nice add-on to existing banking services. ICT is truly transformative in emerging markets, bringing convenient financial solutions to people who most of the time had never interacted with a financial institution (FI) before, and for example had previously relied on bus drivers to send money back to their relatives in the country side. The service provided transforms the life of end-users, either by incredibly simplifying an existing practice as in the case of m-banking replacing the need for physical money transfer, or by offering previously unavailable services such as insurance.

ICT may be used in any sector of financial activity where the reach and affordability of traditional financial services continue to exclude large segments of the population. In the course of our research we looked closely at 52 financial service projects, 46 of which were still running and market based. Currently, ICT financial service models are used by donors, governments and the private sector to provide access to remittances, insurance coverage, deposits and investments, affordable credit, saving accounts and loans, as demonstrated by the case studies in this chapter. M-PESA's innovative mobile transfer solution has registered 13 million users in Kenya, enabling them to transfer money without needing bank accounts, and now deploying additional services. The Philippines was one of the countries where such systems were introduced earlier, with GCASH and SMART Money among the oldest mobile money services still operating today. More recently, one of the sponsors of this study has launched a similar initiative in Africa: for a little bit more than a year, Orange has deployed Orange Money, a range of banking, money transfer and payment services on the mobile phone, in 7 countries where it operates (Cote d'Ivoire, Senegal, Mali, Niger, Madagascar, Kenya, Botswana), with more than 2 million subscribers in May 2011.[70] The suite of financial services offered by FINO including savings, loans, access to credit, remittances, and pension payouts now serves 28 million people in India. In Brazil, Bradesco now offers branchless banking services in virtually every municipality of the country reaching 5 million customers, 27% of which were previously unbanked. Several micro-insurance products offered by phone operators, either embedded in airtime or offered as a top-up paying service, have spread in recent months, with some proving extremely successful at enrolling clients after only a few months of operations.[71] Finally, MYC4 (already discussed in the previous Crowdfunding section) connects 18,000 lenders in developed countries directly with African entrepreneurs in need of capital for business development, and has already helped finance 6,300 SME owners.

> " In Europe, mobile banking is just additive, a little plus to our banking experience, whereas in developing countries, you give a new possibility to people: it is truly transformative."
>
> Dr. Nigel Scott, Gamos Director

---

[70] These 3 initiatives (GCASH, SMART Money and Orange Money) are not treated as full case studies but are described more in depth on p.170.

[71] This report initially included a case study on a mobile-based insurance service, that we were asked to remove just before publication due to unexpected issues with possible legal implications. This chapter still builds on the lessons learnt from that case study, as well as on general research on insurance via mobile phone done for this project, to draw the analysis presented here.

HYSTRA
hybrid strategies consulting

7.1 ICT fills the need for a secure, remotely accessible platform that expands the reach of financial services to remote and poor areas

Financial services offered via ICT can either be:
- A substitute to existing practices (e.g. mobile money transfers, bill payment, merchant payment, electronic payment such as "e-top-up", replacing physical money transfers, as offered by M-PESA and a range of other m-banking service providers; or loan repayments, deposits and withdrawals through point of transactions like FINO or through local shops like Bradesco)

- An entirely new practice (e.g. disability insurance provided by FINO, or "meso-loans" for social entrepreneurs, too small for banks and too large for MFIs in the case of MYC4 discussed in the crowdfunding section).

The role of ICT in financial services and its impact on the BoP

Money transfers, remittances, payments	Savings	Loans	Insurance
Secure money platform ➤ Avoid safety risk from carrying cash ➤ Avoid loss or theft risk from entrusting cash to informal intermediaries ➤ Lower cost compared to money transfers through traditional institutions	**Remote access from ICT device** ➤ Access to bank or other financial institutions offering savings, for previously unbanked populations ➤ Safer money deposits ➤ Build-up of income history, allowing to access loans	**Remote customers' evaluation and remote payments of premium or installments** ➤ Cost savings on transportation both for clients and providers ➤ Lower price from lower cost of services, making it affordable to more clients	
		New sources of funds from crowdfunding ➤ Access to loans for more borrowers, including the "missing middle" ➤ Lower interest rates ➤ New investment opportunities	**Simpler advertising and registration process** ➤ Access to insurance for more customers ➤ Enlarged customers base allowing lower premium ➤ Safety net against adverse events

Legend
- **Service provided by ICT**   ➤ Corresponding impact on the BoP

In both cases, ICT-based financial solutions face a key challenge: trust. People will not entrust their money to an immaterial platform unless they have solid guarantees that the money that they send via phone or internet will reach its intended purpose. Thus in order to extend access to financial services through ICT, projects must 1) develop an adequate technology guaranteeing data and money safety and 2) develop or leverage trusted networks that customers will accept to use.

7.1.1 Offering secured data and money transfers through adequate technology

The security of any handheld device and of the corresponding backend software, and the ability to authenticate agent and customer identity are key to ensuring secure transactions. FINO relies on biometric smart cards that require registration of both client photographs and fingerprints in order to complete

transactions on agent-controlled handheld devices (system similar to that recently implemented by Drishtee as well).[72] Similarly, Bradesco agents utilize barcode readers and magnetic cards-swipe readers during each transaction to authenticate agents and customers.

In service provided directly by mobile operators, the mobile phone application authenticates the customer PIN before each transaction. In the case of M-PESA, the device used by the agent is independently authenticated by the back-end network and agents receive a confirmed authorization code along with their available balance. The agent also has a PIN and agent I.D. that they have to use when doing transactions. For M-PESA, FINO and Bradesco transactions process flow is via an operator, which should prevent an individual from being able to pose as either an agent or a legitimate customer.

7.1.2 Building end-user trust in the system

7.1.2.1 Leveraging trusted brands or entities

One method for extending services is through the platform of a known brand network already established by the entity launching the project. For example, M-PESA and other mobile money services utilize mobile phone platforms as a means for capturing and transferring value in batches too small for traditional financial services. Most mobile money services were launched by established telecommunications providers (Safaricom in the case of M-PESA) to take advantage of immediate access to a large customer base and existing distribution system, and trusted airtime reseller network. Similarly, Bradesco initially partnered with Banco Postal to establish its rural network. Agents offering financial services are local post-officers or retailers, known in their community. Other local agent networks such as Drishtee and eChoupal, (see local agent section) which started with non-financial services, have realized that trust is the one key necessary asset to provide financial services, an asset that they do have. Today they have added financial services to their ICT kiosk offering, similarly leveraging their existing trusted network to both provide much needed financial services and gain new revenues from it.

In the case of Bradesco or FINO, an additional factor creating trust was that the government used these brands to provide social payments to the poorest. In the case of FINO, most of current clients (20 out of 28 million) initially registered to receive their government payments or to enroll in the Indian national health insurance scheme. This first user experience convinced them of the integrity of the system and encouraged them to use FINO for other financial services such as remittances. In each case, scaling of services was possible because the third party brand was already well established and trusted within target communities.

7.1.2.2 Designing end-user experience to elicit trust and avoid abuses

In all cases seen, end-users in emerging countries have a way to verify the transactions made. Phones (in the case of M-PESA) allow users to check their balance status via SMS enquiries. Those necessitating cash transactions (FINO, Bradesco and M-PESA) at local agents provide a printed receipt for all transactions. MYC4 users can check the status of their loans at any time on the web.

Additionally, commissions are kept as transparent as possible. FINO, M-PESA and Bradesco avoid cash transaction between agents and end-users: customers do not pay a commission directly to agents. Instead the commission is embedded in customers' transactions, and agents receive their commissions via the service provider. With this system, customers know how much they pay as a commission for each transaction, which is fixed by the company and not by the agents, thus preventing any abuse. In the case of MYC4, both entrepreneurs financed via the system and the investor are fully aware of the conditions of the loan they subscribe to and the various commissions taken by each intermediary, detailed on MYC4 website.

All these elements are meant to provide the end-user with the assurance that his financial operations are safe. With this confirmed, they can benefit from services previously unavailable to them, at a lower cost than traditional solutions.

7.2 Models mix revenue streams and leverage existing infrastructure to lower costs for all actors

7.2.1 Mix of revenue streams

In order to lower the cost of accessing services, ICT financial services models rely on mixed revenue streams to keep operational and service delivery costs low. Mixed revenue streams are comprised of end-user fees, FI and government payments, and fees from telecommunication or other private companies gaining clients from this service.

All projects include an end-user fee component in their model. For FINO end-users the registration cost is borne by government or FIs, but remittance transactions carry a direct cost of service. Bradesco end-users pay m-banking costs for transactions, but they are generally significantly lower than full-service banking fees. The price of new life insurance schemes is embedded in clients' phone subscriptions.

---

[72] See case study p.80

A story from the field from Dharavi, Mumbai, India, on the life and impact of a FINO agent offering financial services

Dharavi is the largest slum in Asia, hosting more than 1 million people with an estimated yearly turnover of over $500 million, due to its numerous informal manufacturing activities. This is one of the first places where FINO settled, opening offices open between 9am and 6pm all days except Sundays, and offering also "at home" services through field agents (CSP) such as Mary, who travel to customers' house both to sell new products and conduct day-to-day transactions.

Mary used to be a teacher in school. She has 3 children and her husband works in the textile industry. When FINO Dharavi office was set up in 2007, she was one of the first agents to join, and she is now one of the 20% female field agents at FINO. She was recruited notably because she is a trusted member of a savings group of 150 women.

Mary goes to the office only when she needs to deposit money or take cash for customers, but mainly does door-to-door sales. She explains about the product and consequently sells it. For life insurance, for example, at first customers refused to buy it. Some already had an insurance (the LIC insurance, for saving purposes), while others did not understand the interest of setting money aside for 15 years ahead. Now doubts about FINO services have gone and she is selling an increasing amount of FINO insurances. She sells most insurance policies to women, as she has a great network of women from before she started to work at FINO.

She likes her work at FINO because she helps the other women in her group to open bank accounts. Before the husbands often took the money that their wife had saved at home. Now they have a safe place to keep money on bank accounts that they access through FINO. Her best memories with FINO are moments spent talking with clients, now that people know her and she is now more popular in Dharavi. She says that FINO is a different job than others because no travel is required. She lives nearby her customers and nearby the office. Further she likes the fact that she can manage her own time, and that FINO is very flexible. She thinks that the main advantage of FINO is that it has a basket of products and can serve several needs of its customers.

The one thing that she thinks could be improved with FINO would be to arrange remittance of money on the same day that it is sent, rather than the next day as is the case today, to improve the service for customers. This was indeed what the customers interviewed in the shop mentioned as well as the progress to be made. For her work she earns about 4k-5k Rs ($80-100) a month, the average amount for a CSP. When asks what her one wish for the future would be, she says she would like to work with FINO… and maybe to have a higher salary.

Widespread support for financial inclusion positions governments as good sources of revenue for ICT financial services projects, while banks are ready to pay for ICT financial services that extend their reach and reduce their costs. FINO and Bradesco are both used by the governments of their respective countries to channel state payments for pensions and other state programs. In partnering with FINO, banks and FIs pay a one-time fee per new client (and commissions on deposits and withdrawals in the case of banks). In the case of MYC4, FIs that channel crowd-investors' money share the risk with them and with MYC4, receiving interest only upon reimbursement.

In cases where projects use tele-communication platforms and mobile coverage for service delivery, it makes economic sense for telecommunication providers to subsidize the financial services as this new offer can allow them to gain new clients and reduce churn. For example, offering free insurance embedded in airtime can result in increased subscriber retention rates and increased sales of airtime, especially if insurance benefits are conditioned to remaining in the scheme for a given time or spending a minimum amount each month on communication.

7.2.2 Leveraging existing infrastructure for service delivery

Piggybacking on existing networks (both in terms of infrastructure and agent networks) to provide financial services limits investment costs, and has been the strategy of choice for all examples examined here.

In the case of m-banking, around one billion people are unbanked but own a mobile phone, representing an untapped market for banks reachable via m-banking solutions.[73] Using existing telecommunication infrastructure to provide financial service is a way to:
1) Get a new source of revenues for ICT (in particular telecommunications) companies
2) Extend customer base at low cost (compared to opening full-fledged agencies) for FIs.

> "To set up successful financial services using ICT, you need:
> 1) a trusted brand that people recognize;
> 2) to build a dense, liquid network of outlets where customers can reliably convert their physical cash into digital money and vice versa;
> 3) to invest heavily in marketing to build trust and awareness in the new scheme. Inadequate marketing has been the cause of many failures in financial inclusion initiatives."
>
> Radcliffe Daniel, Financial Service for the Poor team, m-banking Specialist, Gates Foundation

Other branchless banking solutions are also cheaper than full-fledged banking because they leverage existing agents rather than building full agencies from scratch. CGAP estimates that a full-fledged bank branch costs $250,000, versus $2,000 to equip a local agent with the necessary software and hardware tools to conduct at least basic money transfers, deposit and withdrawal operations, and in the case of FINO for example, gather applications for insurance and loan products.[74]

By integrating established agents as service providers, projects reduce their cost of scaling up while at the same time building their brand by associating it with trusted persons in the community. For example, Bradesco Banco Postal uses post offices, while M-PESA is provided by Safaricom airtime resellers. Both are now also recruiting local retailers as agents, in any case people with which customers are already familiar. MYC4 also uses existing networks of trusted local providers, usually NGOs, to screen businesses seeking loans. FINO, which did not have any network when it started, recruits members of good standing within target communities and whenever possible people who already have a small shop or an activity with frequent contacts with their community, rather than introducing foreign agents and building new retail points.

To successfully leverage existing trusted agents, projects must find a good enough value proposition to motivate their agents to educate and recruit new clients. Bradesco, FINO, M-PESA and MYC4 all compensate their agents via a commission system incentivizing activity. M-PESA agents may enjoy 3 times higher revenue from their M-PESA commission than from simply selling airtime. FINO also represents a significant new source of income for its agents, be they full-time or part-time. In the case of Bradesco, agent profit is relatively low, but increased traffic to the shop is attractive to retail owners, who often request Bradesco to recruit them as agent (rather than wait for Bradesco to come to them).

---

[73] Mobile money for the unbanked: Unlocking the potential in emerging markets, McKinsey, June 2010. Available at: http://www.mckinsey.com/clientservice/Financial_Services/Knowledge_Highlights/Recent_Reports/~/media/Reports/Financial_Services/MoP8_Mobile_money_for_the_unbanked.ashx

[74] The cost of opening a branch of an MFI is cheaper than the cost of a full-fledged bank branch, yet still higher than that of a local agent equipped with a POT. Technologie: Réduire les coûts pour les clients et les institutions en zone rurale, Presentation by Corinne Riquet, CGAP, Ouagadougou, April 2010. Available at www.cgap.org/gm/document-1.9.44170/Technology%20to%20Reduce%20Costs%20by%20CGAP.pdf

HYSTRA
hybrid strategies consulting

Customer life cycle / End-user experience in local agent business model

Discover >>	Join >>	Get started >>	Evolve >>	Evangelize
1) Launch program through established brand – bank, telecommunications provider or other known network, with large initial advertising campaign 2) Leverage established networks and trusted agents to promote venture and create customer familiarity and loyalty	Free registration, with minimum official documentation needed	1) Simplified end-user experience: No need to interact directly with banking institutions or technology in the case of use of agents 2) Trust mechanism: receipts from transactions at agents (Bradesco, FINO), possibility to check balance at any time (M-PESA), servers validating transactions (MYC4)	Expansion of network and deepening of services with addition of financial services beyond savings (remittances, insurance, pension payments, etc.)	1) Emphasize affordability of services, ease of use and first-time access for previously unbanked customers 2) Allow transfer and exchanges with non-users (M-PESA) to make service known

7.3 Scale requires expansion beyond existing networks, better data and cash security, and higher customer activation; replication needs a sufficient density and adequate regulations

7.3.1 Need to expand beyond existing networks

A challenge to scalability remains in continuing to scale beyond pre-existing networks. For example Bradesco and M-PESA have already converted most of their pre-existing networks (respectively post offices and airtime resellers) into new financial service points, and now have to go through the more complicated process of recruiting new agents to expand their physical reach. For MYC4 who did not have any network initially, the challenge was to identify partners who had this network. It is becoming easier as the brand of MYC4 gets known and larger MFIs contact them directly to set up such partnerships.

7.3.2 Need to attract customers from financially illiterate populations

Attracting customers from financially illiterate populations remains a challenge to scalability. For FINO, the challenge is especially significant as it operates in remote rural areas. As a result, FINO plans to create a "financial education university" to increase financial literacy within its target population. Additionally, low financial literacy means that customers often require assistance. This generates a lot of airtime traffics for helplines or balance enquiry service that projects struggle to manage. M-PESA reacted by making balance inquiry a paying service, while several financial services have set up a dedicated call center.

7.3.3 Need to improve cash management and security

Despite the great level of security achieved by technology to provide financial services, maintaining security while scaling up remains a challenge. Cash management at the agent level introduces safety concerns for agents

who risk robbery and assault, as in the case of Bradesco where 40% of agents have already been robbed. M-PESA is looking for more efficient ways to distribute money and recharge efloat[75], as its agents sometimes have to make several trips a day to distant cash points, losing time actually doing business.

7.3.4 Need to activate registered customers

Many ICT financial service institutions (especially in m-banking) claim successful market penetration in registering customers, yet they actually have low active subscriber penetration rates. Though recruiting customers for mobile services is often a simplified experience (for example necessitating only a free registration SMS from the end-user), this does not guarantee that service will be used afterwards. Many m-banking providers in Africa indeed have many registered users but few active ones.[76]

Regular interaction of well-trained agents with customers, coupled with proper incentives for agents (as opposed to customers) to make the service available, has proven a successful approach for increasing subscriber usage. FINO agents spend several hours per day visiting customers who need to complete transactions. The use of established networks visited in any case for other purposes, such as post offices and local retailers as exemplified by Bradesco and M-PESA, ensures that customers are regularly interacting with their agents both for financial services and for daily transactions. The effect is a highly visible network entrenched in the community, efficiently increasing the activity of subscribers.

7.3.5 Need for a conducive policy environment

A key challenge to scalability and replicability in ICT financial services is the need for a conducive policy environment. For many FIs, margins are smaller in the BoP market and therefore require an initial push from government to promote ICT financial services. Demonstrated government willingness to use such solutions to channel social payments increased the conviction of local bankers and other partners to invest in the market, as exemplified by Bradesco in Brazil and FINO in India.

In the case of Bradesco, government support in the form of modified banking regulation in 1999 allowed for the launch of its branchless banking program. Indian local government was one of the first clients of FINO, using this service to distribute Rural Employment payments and pension payments. Planned participation in a new government scheme for coverage of 73,000 villages for financial services is expected to result in 50 million new accounts by March 2012 from FINO and its competitors.

Another example of government support is that of the Kenyan Central bank regarding M-PESA. The government has seen the huge impact of this scheme and is closely monitoring it with the objective to learn and formalize regulation (notably regarding anti-money laundering regulation and Know Your Customer norms to ensure data protection) in support of the corresponding spread of financial inclusion. This open-minded approach is rather the exception than the rule for other central banks.

Overly bureaucratic systems present significant obstacles to scaling up. Obtaining favorable insurance regulation that allows mobile providers to participate in insurance schemes, for example, has proved difficult, while government-imposed delivery fees for its payments and its mandate to route them through traditional banks limit FINO's flexibility.

7.3.6 Need for population density for effective mobile agents and agent networks

As in the case of "local agents" business model, high population density remains a critical factor in replicability of ICT-enabled financial services that still necessitates human interactions. For both fixed agent networks and mobile agents, high density is key to ensuring the number and frequency of transactions required to break-even, even when agents offer additional services on top of banking.

Actually, most of the agents of Bradesco, M-PESA, FINO and MYC4 have other activities apart from banking, from a local retail shop in the case of Bradesco or M-PESA to a small farming business in the case of MYC4.

---

[75] "efloat" is the name of the mobile money in M-PESA scheme.
[76] Many different ways to promote m-banking have been tried but few have shown success in triggering usage. MTN MobileMoney in Ghana earned 88% awareness of the service among MTN subscribers, yet its utilization rate remained low because still less than 40% knew how to use it. Similarly Vodacom Tanzania spent more than $5 million in its first 25 months of operations for both marketing and building an agent network, yet at the end of that period only 20% of Vodacom customers knew of Tanzanian M-PESA and how to use it. MTN MobileMoney in Uganda offered a starting balance, to discover a few months later that 40,000 registered users had neither transacted nor even cashed out that money. In Afghanistan, Roshan offered free mobile money transfers for a limited period of time. 75% of the high transaction increase turned out to be agents rather than new customers, taking advantage of this system to earn additional commissions. These four operators have since changed their strategies to address these issues. Yet the "right" marketing operation remains to be found. For more information, see notably Driving customer usage of mobile money for the unbanked, N. Davidson and M.Y. McCarthy, GSMA, February 2011, available at http://mmublog.org

Challenging steps in the value chain of financial services

Value chain	Challenges	Solutions
R&D / service design		
Secured software and hardware design	▪ **Set-up secured technology hardware and software, including identification technology**	▪ Partner with financial institutions ▪ Use existing cloud servers in pay-as-you-go
Local agent selection and training	▪ Find people with both local trust and skills ▪ Train agents at acceptable costs	▪ Use existing network (e.g. airtime resellers, established local retailers) ▪ Conduct local interviews, have village vote for their future entrepreneur
Agent finance	▪ Find financing solutions available to local entrepreneurs (often unbankable)	▪ Recruit among agents who already have an activity and can make the initial investment
Initial marketing	▪ **Attract clients:** 　▪Overcome financial literacy barrier 　▪Create trust ▪ Price below alternative	▪ Find entry point that corresponds to local demand (e.g. remittance, gov. payments) ▪ Leverage community agents and known brand ▪ Provide "no frill" banking – at reduced cost compared to full-service banking
Customer relationship	▪ **Keep client active**	▪ Give incentive for high usage ▪ Encourage agent volume of activities through commissions
Maintenance		

☐ Challenging step in initial stages
■ Challenging step to scale

┄┄┄ Only for models that use agents

In financial services, ICT has proved truly transformative, bringing entirely new possibilities to unbanked and underbanked population. Not only does it save them time and money immediately compared to previous alternatives, but it also reduces people's vulnerability to theft and adverse economic events in the long term, by securing their savings and offering them 24/7 safe money transfers and insurance. Developing countries of all continents have seen successful models reach more than 5 million customers and expand quickly – from 28 million clients when we wrote the case study on FINO to more than 31 million a few months later!

These numbers reflect that though this sector is still recent (except for Bradesco, all the models studied here started after 2005, and more than half of the m-banking services active today were launched after 2007) it is undoubtedly the most mature in terms of business models of the four sectors of this report (compared to agriculture, healthcare, and education). Yet not all services are successful, as experienced by the many tentative replications of mobile money services that fail to pass the 1 million user landmark. Moving forward, private initiatives and governments shaping the regulation landscape will need to work together to make sure that most is made out of the huge potential that financial inclusion represents – both socially and economically speaking – for the 2.5 billion adults who still do not have access to financial services and the economic opportunities that they can bring.

Case study list

Logo	Name	Sector(s)	Page
Bradesco BANCO POSTAL	Bradesco/Banco Postal	Financial services	p.148
FINO	FINO	Financial services	p.155
M-PESA	M-PESA	Financial services	p.164
Additional examples of m-money services	GCASH and SMART Money Orange Money	Financial services	p.170

HYSTRA
hybrid strategies consulting

Branchless banking to provide financial inclusion for all through local agents connected to internet in Brazil

Executive Summary:

▪ **Organization:** Bradesco is the largest private bank in Brazil. It has created a joint venture with Brazilian postal offices to create Banco Postal, to offer branchless banking in virtually every municipality of the country through small post offices. In parallel, it has created Bradesco Expresso.

▪ **Project:** Launched in 2002, Bradesco operates two branchless banking networks, one via Banco Postal based on its extended postal office network, and the other through its Bradesco Expresso brand, based on individually recruited retail outlets, all using computers to register financial transactions. In total, it had 24.2k agents (10/2009) serving over 5m customers. 27% of its customers were previously unbanked.

▪ **Innovation:** Bradesco created a low cost banking network reaching virtually every municipality in the country, based on equipping retail agents with software and card readers to handle basic banking services.

▪ **Sustainability:** The solution is reaching nearly all Brazilians who now have banking services close to their home, often avoiding hours of traveling to bank branches. While not necessarily "profitable", these networks save a lot of cost to banks by leveraging existing computer infrastructure, giving these extended networks economic sense. For agents, profitability is low but banking services increase shop traffic and thus overall revenues. Though the system is simple (using existing infrastructure and technology) which has allowed it to scale rapidly, there are challenges to replicate it in other countries: regulation, availability of adequate agent networks, existing internet connectivity…

Bradesco agent of the Bradesco Expresso network,
in Eloisa d'Autazes supermarket, with a point of terminal
and barcode reader for financial transactions

ASHOKA FULL ECONOMIC CITIZENSHIP

Project current status

- **Date of creation:** 2002

- **Product / service delivered:** Branchless banking enabling small retail outlets to offer several simple banking services: receiving and making payments (including social welfare), deposits and savings offers, commercial loans reception and payback

- **Benefit(s) to end-user:** Geographic proximity of service in spite of geographically spread country, sometimes avoiding several hours of traveling; low fees for basic transactions; access to credit and welfare payments

- **Customers:** In all of Brazil, both urban and rural population. All Brazilian municipalities reached by one of the banking networks. Over 5m customers for this network alone

- **Competitive landscape:**
  - *Substitution before project:* Only traditional banking branches in main towns available
  - *Competition:* 3 other main networks with identical model in Brazil, including: Caixa Economica (brand "Caixa facil", chosen as main distributor of social welfare package "Bolsa familia"), Banco do Brasil, Banco Lemon, plus others stepping in, such as Banco do Nordeste, trying to innovate on products such as Microloans
  - *Overall:* over 50k agents authorized to open accounts and handle deposits in Brazil, plus another 100k "banking correspondents" often specialized in credit

- **Partners involved:**

| Agents / Existing networks such as rural post offices or lottery outlets, or simple retailers | Agents integrator/ Independant players such as Telecom Services for Banco do Brasil-but hard to make profitable | Governement / Key player by modifying regulation in 1999 to enable branchless banking |

- **Technology aspects:**
  - *At agent level (no need for technology at end-user level):*
    - PCs with internet connection, generally leveraging equipment already in place at agent's (so no new investment)
    - Software program for basic banking transactions (specific investment to adapt to non-banking agents)
    - Barcode reader and magnetic card swipe reader (approx. $20 per agent)
  - *Training:* Needed for agent network, none for end-user
  - *Data security management, technical support and maintenance:* Provided by telecommunications integrator company (except software support and updates done by Bradesco)

HYSTRA
hybrid strategies consulting
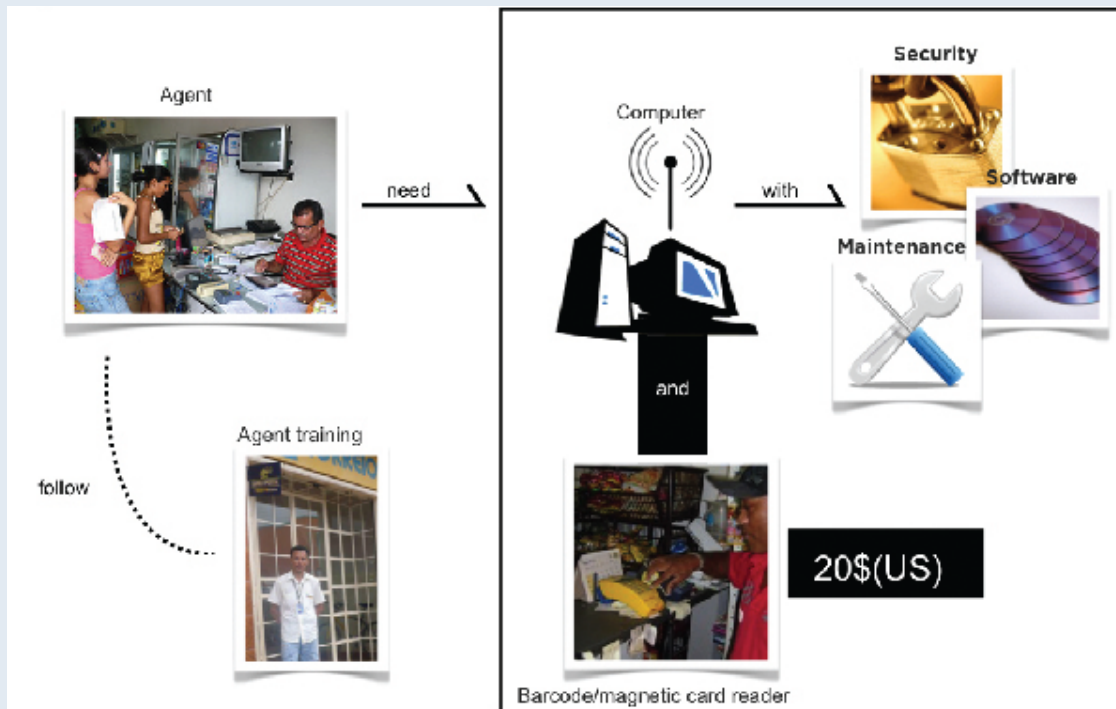
- **Business design:**
  - *Staff recruitment process:* The critical activity, to build out a capillary agent network and maintain it. More future agents going to Bradesco than the other way around, as for a retailer, becoming an agent means increased traffic inside his retail store and thus increased sales
  - *Staff capacity building:* New branchless bank (BB) agent trained by technology integrators on communication tools, at no cost to BB except in some cases, $20 for card swiper/card reader. Software and online support offered by Bradesco to the BB agent, and training offered at nearest local Bradesco branch
  - *Marketing:*
    - *Activities conducted, marketing channels and media used:* Merchandising material to make agents visible, but quite heterogeneous (not as prominent as M-PESA for instance)
    - "The bank that gets where no one else gets"
    - Customers' trust built thanks to human relationship of agents
  - *Distribution:* 24.2k agents in October 2009, including post offices (6k) and a vast typology of small retailers, both in small rural municipalities and remote areas of large cities
  - *Pricing:* Lower commission for lower amounts deposited. Low prices compared to full-fledged branch banking, especially for small amounts (e.g. for a deposit of $23, transaction cost 38% cheaper than at traditional bank office)
  - *Payment, cost and revenue split:* Analogous to normal commercial banking services
  - *Agent financing:* Agent cash flows financed by bank, thus covering risks related to robbery (with "franchise" for agents)

- **Regulatory aspects:** Allowing for non-banking actors to offer a broad range of banking services: absolutely key to favor emergence of this solution

- **Monitoring and impact measurement:** Done intensely by external agencies such as CGAP, including detailed agent and population surveys

- **Future plans and next steps:** Increase penetration of high-value products (savings, credits, insurance…) to increase profitability for bank and for agents

ASHOKA **FULL ECONOMIC CITIZENSHIP**

Relationships between actors of the Bradesco-Banco Postal model
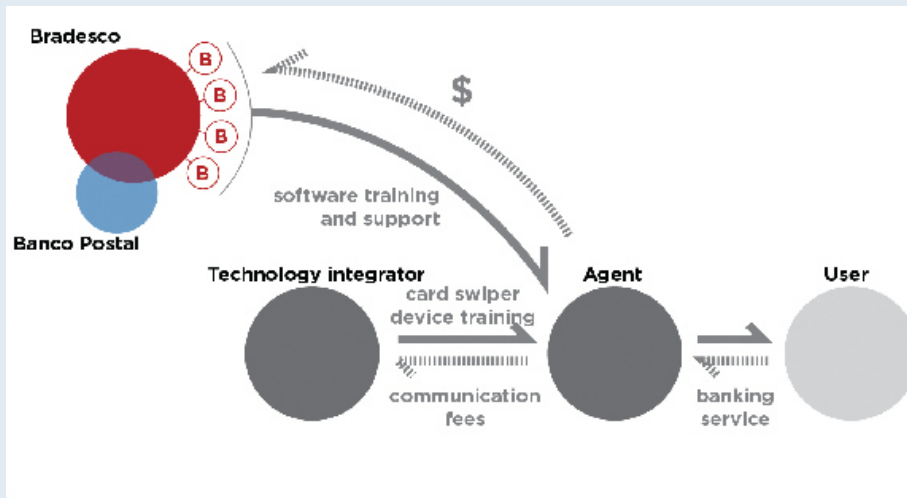
IS THE PROJECT:

1/ SOLVING THE PROBLEM?

▪ **Problem magnitude:** Prior to this solution, significant proportion of population unbanked or living far away from their banking branch

▪ **Solution provided:**
- *Tool quality:* Generally good as running with any PC and internet connection; however occurrence of service outages, quickly impacting agent due to high number of daily transactions
- *Service quality and comprehensiveness:* Quite complete offering of banking services, for instance if compared with mobile-based services

▪ **Scale and reach:**
- 24.2k service delivery points
- 5m users for this network alone
- All municipalities in Brazil covered by one network, to the point of agents starting to complain about excessive competition

▪ **Acceptance and usage:**
- Easy fit with people as human-based service
- No need to learn a new technology, nor even to be able to read

▪ **Socio-economic impact:**
- *For the BoP:*
  - Strong increase of financial inclusion (27% previously unbanked)
  - Time savings in making and receiving payments
  - Opportunity to save and access credit, especially for rural population (underbanked) with 38% of transactions related to deposits and withdrawals, encouraging saving
- *For retailers:* Increased traffic in their shop
- *For local commerce:* Higher retail sales in small municipalities, as previously people would spend more money in town where they traveled for withdrawals

- **Environmental impact:**
  - Not taken into account
  - Marginal, as it leverages existing PCs needed to run normal retail outlet

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Direct cost of service:* Typical banking transaction costs, generally lower than full-service banking. Average cost based on 8 use cases: $4.3/month (PPP)
  - *Cost of best alternative:* higher costs of traditional banking branches, plus travel costs to get there, sometimes over 100km
  - *Ability to reach the poorest:*
    - Affordable for any household
    - Previously unbanked: 27% users

- **At agent level:**
  - *Initial cost:* For agent already equipped with PC and internet (the majority), only ~$20 (bar code and card readers)
  - *Additional indirect cost:* High costs related to secure cash transportation to the agents, and losses due to robbery (over 40% of agents have been robbed as they need to make frequent trips to replenish cash to nearest bank)
  - *Revenues:* $5.17/day profit margin on commissions, low compared to effort required and average number of transactions (average 137-339 transactions/day at $0.26 commission per transaction and 10% profit margin); considering this may imply the need for more personnel, not really profitable to them other than increasing foot traffic for cross-selling

- **At project level:**
  - *2010 revenues and profit:* Not disclosed. Not profitable standalone (according to observers' estimate), but huge cost savings compared to expanding traditional banking network, hence a clear economic rationale for banks
  - *Cost recovery level:* Not disclosed. Initial capex quick to recover for large banks
  - *Initial investment:* Financed internally, substantial for software adaptation and developing connectivity when not available. No outside funding

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:** Opportunity to offer higher value services beyond payments, such as credit, savings and insurance, to make the service more economically attractive for agents and thus recruit additional ones

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Absolutely critical regulation as often environments are very restrictive regarding banking
  - Available and suitable agent networks to jumpstart the service, such as postal offices, lotteries or bus networks
  - Existence of G2P transfers (salaries, welfare payments, 1 in 4 Brazilians receive welfare) creating a true need for network expansion
  - Reasonable internet connectivity (fixed or via GPRS/3G or Wimax networks) as well as power supply to operate PCs
  - Paper-based payment systems requiring more efficient solutions
  - A minimal "banking culture" in the population

2 stories form the field: Bradesco agents

Nestor's Internet café   PROFITABLE

Main motivation : bring more people into his store

Nestor is at 5 minute in car from the Deposit Bank

«traffic has increased by around 35% since being a banking agent»

«many people come to use the computers to print their bills from the Internet and then pay for the bills right here in my store»

0.15 Brazilian Reais BRL (0.08 USD) per transaction

+

Monthly commission of 209 BRL (114 USD)

+

- 30 BRL (16 USD) for insurance.

=

Profit in November of around 179 BRL (98 USD)

Roberto's hardware store   NON-PROFITABLE

Roberto has made a bigger investment into the agent business. He hired another employee to help with the transaction volume and also added a section to his hardware store to make space for this.

Losing 490 BRL (268 USD)/month

Commission: +160 BRL (87 USD)/month

Employ extra staff: -353 BRL (193 USD)/month

+

Extra space: -250 BRL (137 USD)/month

+

Electricity: -8 BRL (4 USD)/month

+

Insurance: -40 BRL (22 USD)/month

Total: -650 BRL (355 USD)/month

HYSTRA
hybrid strategies consulting

Sources:

Interview with Mark Pickens, CGAP, December 2010

Building viable agent networks: Brazil and Kenya, Mark Pickens, CGAP, February 2010, available at :
www.cgap.org/gm/document-1.9.49784/Building_viable_agent_networks_Brazil_and_Kenya.pdf

Branchless Banking 2010: Who's Served? At What Price? What's Next?, Claudia McKay, CGAP, 2010 available at :
www.cgap.org/gm/document-1.9.47614/FN66_Rev1.pdf

Branchless banking agents in Brazil: Building viable networks, CGAP, February 2010, available at :
www.cgap.org/gm/document-1.9.49703/Branchless_Banking_Agents_in_Brazil.pdf

Banking Agents Part III- Market Reach, Hannah Siedek, CGAP, 2007, available at :
www.cgap.org/gm/document-1.9.2115/agents_marketreach.pdf

Being Able to Make (Small) Deposits and Payments, Anywhere, Ignacio Mas, April 2008, available at :
www.cgap.org/gm/document-1.9.2639/FN45.pdf

Scenarios for Branchless Banking in 2020, Mark Pickens, David Porteous, and Sarah Rotman, CGAP, November 2009, available at :
www.cgap.org/gm/document-1.9.40599/FN57.pdf

The Early Experience with Branchless Banking, Gautam Ivatury and Ignacio Mas, CGAP, April 2008, available at :
 www.cgap.org/gm/document-1.9.2640/FN46.pdf

A Delicate Balance: Consumer Protection in Branchless Banking, CGAP, October 2010, available at:
www.cgap.org/p/site/c/template.rc/1.26.14363/

Branchless banking in Brazil: making it work for small merchants, Sarah Rotman, CGAP, February 2010, available at:
technology.cgap.org/2010/02/05/branchless-banking-in-brazil-making-it-work-for-small-merchants/

From rural outpost to boomtown: how banking services transformed a town in the Amazon, Claudia McKay, CGAP, January 2010, available at:
technology.cgap.org/2010/01/28/from-rural-outpost-to-boomtown-how-banking-services-transformed-a-town-in-the-amazon/

Agents in Brazil: a series on the impact of branchless banking, Sarah Rotman, CGAP, January 2010, available at:
technology.cgap.org/2010/01/26/agents-in-brazil-a-series-on-the-impact-of-branchless-banking/

Branchless Banking and Consumer Protection in Brazil, CGAP, January 2010, available at:
www.cgap.org/p/site/c/template.rc/1.26.12508/

The Role of ICT in Improving Microcredit: The Case of Correspondent Banking in Brazil, Eduardo H. Diniz, Marlei Pozzebon, Martin Jayo,Cahier du GReSI no 08-03, Septembre 2008, available at: www2.hec.ca/gresi/documents/cahier0803.pdf

The lurking challenge of branchless banking: Activating the inactive customer, Claudia McKay, CGAP, January 2011, available at:
technology.cgap.org/2011/01/25/the-lurking-challenge-of-branchless-banking-activating-the-inactive-customer/

Getting Beyound payments, Mark Pickens, CGAP, November 2010, available at: technology.cgap.org/2010/page/2/

10 things you thought you knew about M-PESA, Claire Alexandre, Senior Program Officer at the Bill & Melinda Gates Foundation, November 2010, available at: technology.cgap.org/2010/11/22/10-things-you-thought-you-knew-about-m-pesa/

Correspondent Banking in Brazil, July 2010, available at: ifmrblog.com/2010/07/28/correspondent-banking-in-brazil/

Banking Agents Fuel Economic Growth in the Amazon Basin, CGAP, April 2010, available at:
www.cgap.org/p/site/c/template.rc/1.11.1025/1.26.13408/

Towards End-to-End Security in Branchless Banking, Saurabh Panjwani, Microsoft Research India, available at:
www.mobileactive.org/files/file_uploads/Towards%20End-to-End%20Security%20in%20Branchless%20Banking.pdf

ASHOKA FULL ECONOMIC CITIZENSHIP

Integrated payment solution company
for the unbanked and under-banked in India

Executive Summary:

▪ **Organization:** Financial Inclusion Network & Operations Ltd. is a private financial services company offering technology and services to promote payment solutions for the unbanked and under-banked sector.

▪ **Project:** FINO was founded in July 2006, with the objective of building technologies to enable financial institutions to serve the unbanked, and to service the technology requirements of entities engaged in servicing the BoP. In February 2011 it is serving 28 million customers, providing them with access to pension and government scheme benefits, savings accounts, loans, remittance capacity, and health and disability insurance.

▪ **Innovation:** FINO has proved that biometric smart cards and technology solutions are able to overcome entry barriers for the banking and payment solution sector. Through the FINO Fintech Foundation, a non-profit arm, FINO now aims at tackling financial illiteracy by training its business correspondents who in turn train customers. Further it plans to set up a financial education academy.

▪ **Sustainability:** FINO systems are highly flexible, customizable, scalable, ready for deployment, and are effectively bringing banking services to previously unbanked people (around 28 million since inception). The growth rate of 30,000 customers per day in the last 4 years demonstrates FINO's ability to reach and retain BoP customers, while being fully profitable. With 700 million people in the unbanked sector in India, the market for local expansion is large. The next decisive step for FINO is to expand into the international market.

*FINO agent conducting financial transactions
for a client in Rajasthan*

Project current status

- **Date of creation:** July 2006

- **Product / service delivered:** Technology services enabling financial institutions and other entities engaged in servicing the BoP to include the underserved and unbanked population of India for pension and government scheme benefits, savings accounts, loans, remittance capacity, and health and disability insurance

- **Clients:** 23 banks, 10 MFIs, 15 government entities, 5 insurance agencies

- **Customers:** Targeting specifically unbanked and BoP in Rural and semi-urban regions of India. Over 28m users in over 36k locations in India (as of February 2011), with around 40% women

- **Benefits for customers (end-users):** Financial inclusion

- **Competitive landscape:**
  - *Substitution before project:* For clients: None, due to high cost of customer acquisition and servicing. For end-users: Limited amount of financial services at higher cost and with longer delays
  - *Competition:* Invest India Micro Pension Solution, Integra Micro Systems, Atom Technologies, A Little World, TATA Consultancy - pilot program

- **Partners involved: Investors:**
  - *Public sector banks:* 16% investment (Corporation Bank, Indian Bank, Life Insurance company of India and Union Bank)
  - *Private sector bank:* 25% (HSBC), 25% (ICICI Group –first historical investor as ICICI bank incubated project until April 2006)
  - *Private sector - telecommunications companies:* 16% (Intel)
  - *Private trust:* 1% (IFMR Trust, affiliated with ICICI)
  - *International agencies:* 17% (IFC)

- **Technology aspects:**
  - *At FI level:* Accounting and Management Information Systems (MIS) to facilitate and track transactions
  - *At agent (Customer Service Point, CSP) level:* Handheld Point-of-Transaction (POT) terminals to conduct transactions
  - *At customer level:* Biometric smart-cards (registration by photo and finger print) as authentication devices, and since 2011 mobile application for customer e-Banking
  - *Capacity:* Unlimited data flow through POT (recorded 30k enrollments per day in 2009)
  - *Training needed:* In-house technology R&D team for product development; FINO network of agents and partners trained in POT terminal use and maintenance; end-users trained on how to use smart-cards for transactions
  - *Data security management:* Done by Centralized Processing Centre (ISO 9001:2000 certified). Transaction security ensured by biometric smart-cards
  - *Maintenance:* 3-4 FINO tech agents per zone, responsible for tech maintenance and troubleshooting

- **Business design:**
  - *Staff recruitment process:* CSP recruited based on social standing and recommendations from village council and one other source. Targeting of individuals with adequate education, knowledge of financial terminology and employment that already makes them mobile. Candidates drawn by secondary income stream and social prestige of "banker" title

- *Staff capacity building:* 3 day program training to District Coordinator (DC), Block Coordinator (BC) and Bandhu (Last Mile Business Correspondent), regular on the job training cum refreshers. Currently piloting Financial Literacy program (Consumer Education/Awareness): 3-day CSP training by master trainers, to then provide 3 sessions of 2-hour training to villagers by CSP itself
- *Marketing:*
  - *Activities conducted:* Participation in Rural Marketing Congress of India, outreach to local village councils and banking institutions and/or individuals. Door-to-door CSP marketing. Since 2010, posters on bus stops and other visual advertisements. Leaflets and advertising posters available at FINO shops explaining product conditions
  - *Key selling points:* Service accessibility through CSP; low-cost or free services (for end-user, as most of FINO costs are borne by government or FIs); speed of financial operations compared to traditional solutions
  - *Agent (CSP) motivation:* Commission based system motivating CSPs to recruit and educate users on FINO technology
  - *Customer loyalty:* Customer recruited by familiar CSP within the community, trained in use of FINO system by CSP, regular visits conducted to customers' home or work by CSP (majority of CSP's customers in CSP home village, ensuring customer familiarity and loyalty). For mBanking: call center to answer customers' queries
- *Distribution:* 15k field agents deployed, some in small offices (e.g., in Mumbai: 80 mobile agents in addition to 70 offices open 9am-6pm except Sundays)
- *Product availability:*
  - *Loans:* Only for clients with history of more than 10 transactions on savings account. "Direct loan": $60 (3k INR) available for first loan, then if repaid $120, $180 and up to $240. "Deposit loan": $200 (10k INR) available for people with savings of $100 (5k INR)
  - *Life and disability insurance:* Open to all kinds of profiles.
  - *Government schemes:* List of beneficiaries communicated by government (including subsidized health insurance Rashtriya Swasthya Bima Yojana -RSBY)[77]
- *Pricing, cost and revenue split* (see flow chart on next page)*:*
  - *Cost for customers:*
    - *Savings account:* Designed with "no-frill" at lowest cost to consumer, to overcome barrier of high traditional fees for opening accounts and maintaining minimum balance. Free registration, deposits and withdrawals
    - *Remittance:* $0.5 (25 INR) per transaction of up to $200 (10k INR)
    - *Loan:* 24% interest rate
    - *Life and disability insurance:* $1 (50 INR) per annum for up to $1k (50k INR) coverage in case of death, $500 (25k INR) in case of permanent disability
    - *"Cashless" health insurance:* Specifically designed for people earning less than $2/day: $1 insurance premium (10% of cost, 90% subsidized by government) for up to $600 coverage at hospital
  - *Cost for clients:*
    - *Savings account:* One-time fee per customer acquisition and fee per transaction paid by FI to FINO
    - *"Cashless" health insurance:* $9 premium per year per customer paid by government to FI who pay FINO

---

[77] *RSBY has been launched by Ministry of Labor and Employment, Government of India to provide health insurance coverage for Below Poverty Line (BPL) families. The objective of RSBY is to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization. Beneficiaries under RSBY are entitled to hospitalization coverage up to 30,000 INR for most of the diseases that require hospitalization. The government has even fixed the package rates for the hospitals for a large number of interventions. Pre-existing conditions are covered from day one and there is no age limit. Coverage extends to five members of the family, which includes the head of household, spouse and up to three dependents. Beneficiaries need to pay only 30 INR as registration fee while Central and State Government pays the premium to the insurer selected by the State Government on the basis of a competitive bidding. Through FINO, participants are serviced this cashless scheme by eliminating the need to settle the bills for the treatment by using the RSBY-FINO card at the empanelled hospitals. More information available at www.rsby.gov.in*

HYSTRA
hybrid strategies consulting

- *Government scheme payments:* 2% service fee (set and paid by government) for delivery of National Rural Employment Guarantee Act (NREGA) payments[78] and social security pension payment, mandated by government to go through traditional banks, who then pay FINO to deliver service
- *Cost for FINO:* Paying employees and technology costs (amongst other regular operating costs)
• *Payment:* End-user initiating remittance charged at time of transaction (no charge to receiver, who must simply have bank account or FINO card); CSP paid mainly on commissions (for new account opening and per transaction)

FINO revenue model and compensation flows

*Commissions paid by customers are shared between FINO and financial institutions
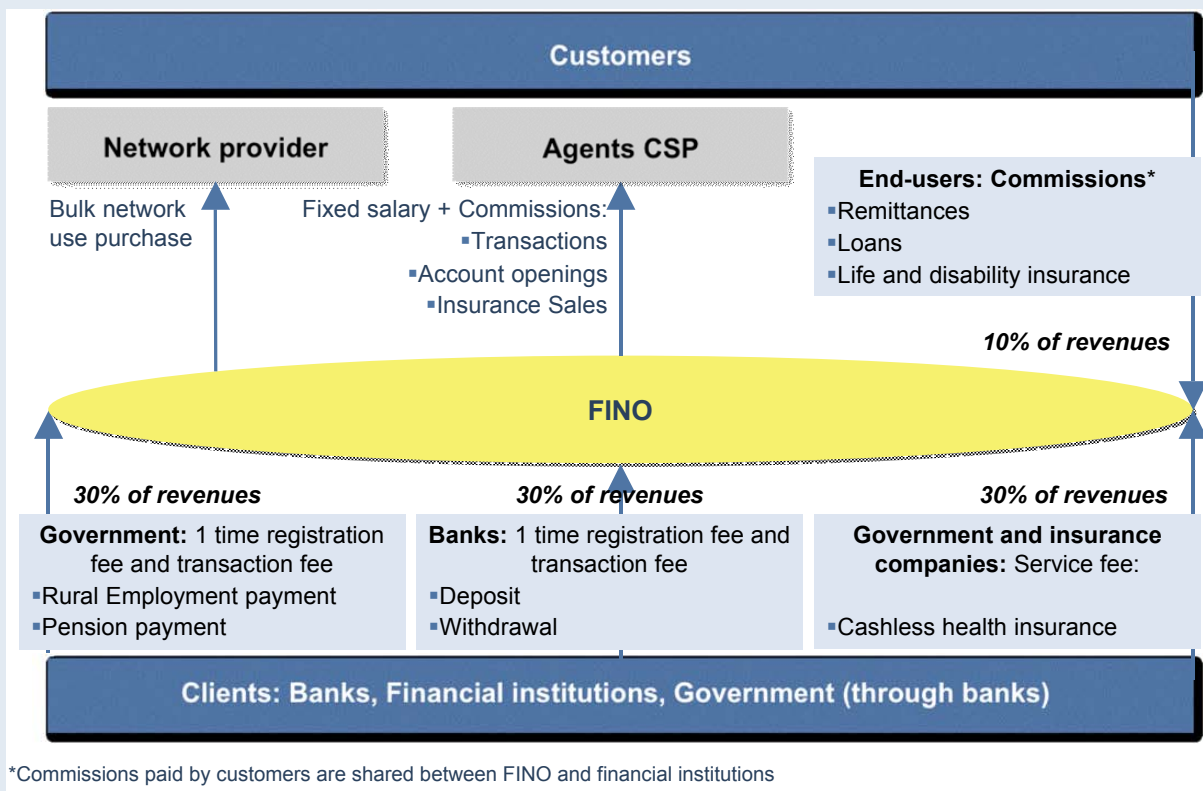
- **Regulatory aspects:** Official authorization to conduct financial transactions for non-bank entities, ratified by government in January 2006 (Reserve Bank of India guidelines). Strong support for promoting financial inclusion from government which today is the source of more than 50% of FINO revenues (for government scheme payments). Accreditation with NABARD (National Bank for Agriculture and Rural Development) obtained early 2011

- **Monitoring and impact measurement:** For internal purposes only. Web-based and SMS based dashboard for real-time status of all agents and projects. Tiered monitoring and rating system for BCs and CSPs, tracking attendance, punctuality, number of transactions conducted and size of total transactions to identify high and low performing agents

---

[78] *NREGA is a job guarantee scheme that ensures 100 days of employment in every financial year to adult members of any rural household willing to do public work-related unskilled manual work. NREGA payments are part of the Indian jobs program. Through FINO, participants in the program are able to receive their full payment electronically on their 3rd day of work with no cost to them.*

- **Awards:**
  - Times Sustainable Banking Awards - Banking at the Bottom of the Pyramid Award
  - Skoch Financial Inclusion Award 2011
  - Manthan 2010 Award
  - eIndia Health Award 2010
  - INTEL Duet Award
  - Frost & Sullivan South Asia Product Line Strategy Award
  - Excellence in Innovation Award in Indira International Innovation Summit
  - Edge Network honor for using Information Technology in maximizing business impact

- **Future plans and next steps:**
  - Participate in new government scheme for coverage of 73k villages of over 2k habitants with financial services, resulting in at least 50m new bank accounts by March 2012
  - Grow to reach at least 100m of all 700m unbanked in India
  - Grow share of revenues directly coming from customers
  - Launch a financial education academy before 2014
  - Launch international expansion, mainly through ad

Fingerprint authentification system on POT

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** 700m unbanked people in India (only 40% of population has access to financial services), particularly in rural and semi-urban regions

- **Solution provided:**
  - *Tool quality:* Widely available through far-reaching network of CSPs and mobile customer banking, secure and flexible systems, robust-POT devices that can be used in all conditions and easily transported
  - *Service quality and comprehensiveness:* Full range of services for credible financial identification; insurance; mobile banking; credit; deposits and investments; savings accounts; remittances and government benefits

- **Scale and reach:**
  - 28m currently enrolled clients, initially recruited by:
    - RSBY insurance scheme for 10m (out of 23m people enrolled in this scheme)
    - Government payments for 10m
    - Financial services for 8m
  - Average of 30k enrollments per day
  - Average of 10k life insurance subscriptions per day (6 months after launch)

- **Acceptance and usage:**
  - *Acceptability:* Good fit with people's habits and preferences – CSPs work in local language and nearby customer, minimizing traveling for customer
  - *Usability:* High usability: Overcoming literacy barriers through intermediary agent
  - *Customer trust:* Facilitated by:
    - CSPs recruited among trusted members of community
    - Availability of local technicians in each district in case of technical issue

- **Socio-economic impact:**
  - 28m customers enrolled and receiving financial services, approximately 1/4 of which previously unbanked
  - More than 15k people employed, including 20% of women among CSP
  - Access to health, life and disability insurance

- **Environmental impact:** Not mentioned

- **Other impact:** Gains in efficiency due to technology for both FIs and government agencies: real-time banking, greater reach into rural and semi-urban communities

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Initial cost:* None (registration cost borne by government or FIs)
  - *Direct cost of services:* $0.5 (25 INR) per remittance service transaction up to $200 (10k INR). Free deposits and withdrawals
  - *Additional indirect cost/benefits:* No transport costs due to POT devices
  - *Average household income:* 52% of Indian population with less than $1.5k per year

- *Cost of best alternative:* Traditional banking services 4 times as expensive as FINO services
- *Ability to reach the poorest:* Reaching ~ 7m previously unbanked people

- **At local organizations (CSP level):**
  - *Initial cost:* Variable in each state. In Karnataka, deposit of $200 (10k INR), $100 security deposit for POT device and $100 for cash float (put on locked savings account with 7-7.5% interest)
  - *Monthly salary (full-time in Mumbai):* Average $160, up to $360
  - *Monthly salary (part-time in Bangalore):* Around $40 (for 60 account openings and 400 transactions, with higher commission for account opening than transaction), most coming from account openings

- **At client level (FIs, government):**
  - *Direct cost of services:* Customer acquisition fee and transaction fee
  - *Avoided costs:* Traditional high banking costs (paperwork, transportation costs, branch costs, etc.)
  - *Additional sales (for FIs):* New clients, previously unreachable

- **At FINO level:**
  - *Employees:* 800 direct employees, 15k field agents, some with other full-time jobs
  - *Growth:* Operating revenue growth of 140% between 2006 and 2009
  - *Revenues:*
    - $22.5m in 2009-10
    - Target of US$52m in 2010-11, i.e. a 130% increase, aiming for 10-15% profit margin
  - *Cost recovery level:* Breakeven in Q1 2011, cash positive since Q4 2009
  - *Funding:* Incubated by ICICI bank, no current operating subsidy for core business. Grant from IFC, UNDP, World Bank, and Microfinance Opportunities to develop Financial Inclusion education programs

3/ SCALABLE AND REPLICABLE?

- **Requirements/ pre-requisites for the project to scale:**
  - Ability to recruit and train more CSPs
  - Improved infrastructure to overcome current travel challenges for CSPs
  - Simplification of overly bureaucratic system to allow faster expansion (for example, today government decides delivery fees for NREGA and pension payment services and mandates that it must go to FINO through a bank which takes a 0.25% cut of FINO's payment, limiting flexibility)
  - Better education and technology literacy, especially to understand insurance products

- **Additional requirements/ pre-requisites for the project to replicate:**
  - Favorable political or regulatory environment promoting financial inclusion (for financial institutions, margins are smaller on this market than for traditional banking, thus need for initial push by government to promote this type of service) and /or ready to use such solutions to channel for government payments
  - Willingness of local banks or partners to invest in this market
  - Population density allowing each CSP to be profitable
  - Social /cultural acceptance of technology use for banking

THE PEOPLE

STORY OF THE ENTREPRENEUR

Manish Khera, CEO

The story of FINO begins in 2003 as an initiative incubated by ICICI Bank, which was investigating how to help Microfinance Institutions (MFIs) overcome barriers to scale, and in particular the lack of a technology platform. Manish, then an ICICI Bank employee who had worked first on Government Banking and then on Product and Technology, formed in 2004 an "Alternate Channels Group" to promote financial inclusion through new modes of transactions. They came up with a model for non-bank owned channels to interact with bank customers, which was ratified by the Reserve Bank of India in January 2006. Marrying the use of technology and the "business correspondent model" into a single business launched FINO as an independent company in July 2006. Initially working with MFIs as business correspondents, FINO soon developed its own agent network to provide a range of financial services allowing MFIs re-focused on providing credits.


Rishi Gupta, CFO

Until 2003, Rishi was working at the ICICI Bank with Manish Khera. Rishi then joined the IFC. When FINO launched as an independent entity in 2006, Rishi joined Manish to set up the new venture. He remembers: "Things went very fast. In May we decided to set up FINO, in July FINO was funded and officially launched, with a team of 10-12 people. These people where passionate about setting up a company that would make a difference, they were true visionary people in the banking system."

INTERVIEW WITH RISHI GUPTA, CFO

▪ "Why are you doing all this?
I very much liked the idea to start a company working at the grassroots level, even though it meant letting go some of the comfort of my previous job, when I was working at a large international organization.
▪ What are the key features that made FINO so successful?
Our value proposition for FINO is that: 1. Products have to be affordable, 2. They have to be scalable; and 3. Governance and ethics must be irreproachable.
▪ What are the key challenges that you face or have faced?
In the first phase, challenges were to get fund and build a team. Today, this is done, and we are doing great on customer acquisition. Our remaining challenges are:
1) Operational cash management on the ground. We are growing very fast and have a customer base of 28m people. This means it becomes difficult to oversee every aspect. Cash fraud does not happen often, but it is a challenge to manage these things.
2) Setting up a micro-insurance product that fits both the requirements of customers and insurance companies. Customers do not initially understand insurance, do not trust institutions and banks, do not usually think in terms of 15 years horizon, and for them, every rupee spent matters. Additionally the traditional paperwork procedures of insurance companies make it too expensive to serve low premium clients. On customers' side we had to create trust, on the insurance side we had to work with them to change their procedures.
▪ What would be your key advice to replicate this project?
You need to choose a country with sufficient density and a large enough population to make it profitable, as margins per transaction are smaller than for traditional banking. You also need to find a financial institution that is interested in serving this market."

Exchange rate for this case study: 1 USD=50 INR
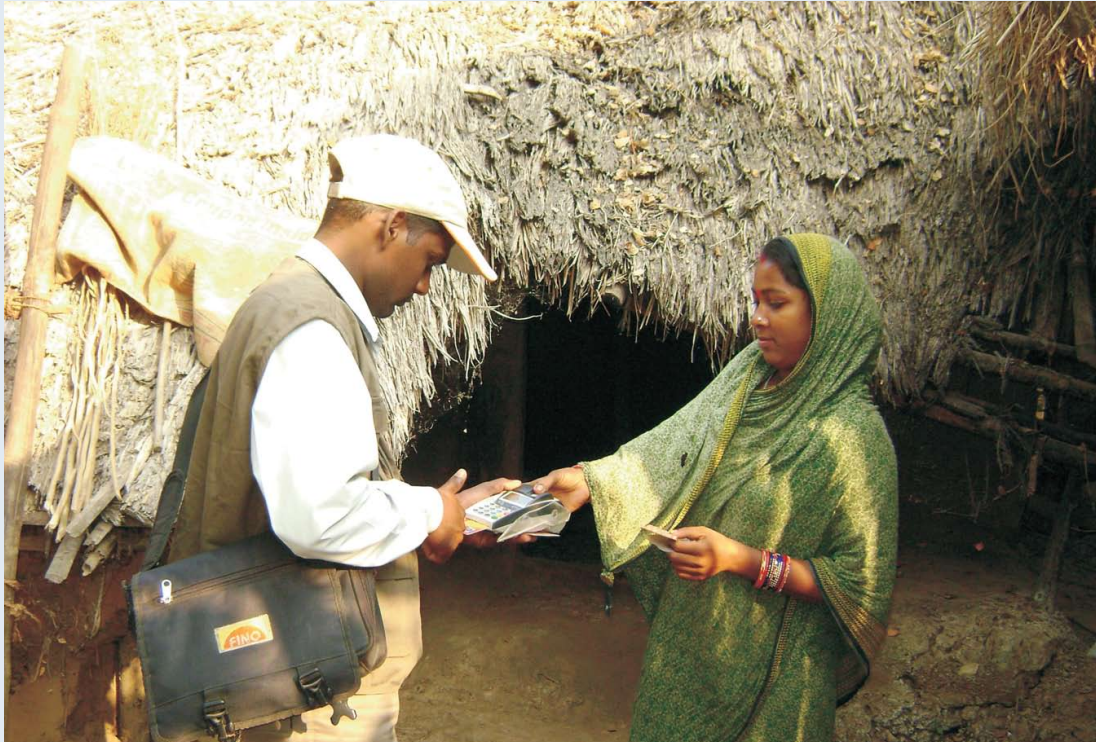
*FINO agent checking fingerprint of a customer
for a financial transaction in Rajasthan*

Sources:

Field visit to FINO's headquarters in Mumbai and operations in Dharavi on February 10, 2011. Meeting with Satish Nair, Marketing Director; Rishi Gupta, CFO; Tarun Agarwal, VP and Head of Channel Empowerment and Management; Kanika Tiwari, Corporate Communications; Prakash Ranjan Lal; Channel Empowerment and Management Group; Amit Singh, Mumbai District Coordinator.

FINO website: fino.co.in

Business Linkages: Enabling Access to Markets at the Base of the Pyramid, Report on Roundtable Dialogue, March 2009, Available at: www.ifc.org/ifcext/advisoryservices.nsf/AttachmentsByTitle/BOP_Business_Linkages_Enabling_Markets_at_the_BOP/$FILE/BOP_Business_Linkages-Enabling_Access_to_Markets.pdf

Cashless health insurance for hawkers, courtesy Government of India, October 2010, Available at: money.oneindia.in/news/2010/10/22/cashless-health-insurance-courtesy-gover.html

Deepening Financial Access in India: A Blueprint for Commercial Banks, IFMR, February 2010, Available at: www.ifmrtrust.co.in/downloads/IFMR-Finance-Foundation-Blue_print.pdf

Financial Inclusion "Let's get it done the FINO way!", Manish Khera, CEO FINO, 2010

FINO: A Low Cost Way Out of the Microfinance Mess, One World South Asia, November 2010, Available at: knowledge.wharton.upenn.edu/india/article.cfm?articleid=4545

FINO bags SKOCH Financial Inclusion Award 2011, Andhra Business Bureau, January 2011, Available at: andhrabusiness.com/NewsDesc.aspx?NewsId=FINO-bags-SKOCH-Financial-Inclusion-Award-2011.html

FINO Inclusive Business Case Study, IFC, 2010, Available at: www.ifc.org/ifcext/advisoryservices.nsf/AttachmentsByTitle/FINO_Case_Study/$FILE/FINO.pdf

Contact persons for the project:

Nair Satish, Marketing Director: satish.nair@fino.co.in

Tiwari Kanika, Corporate Communications: kanika.tiwari@fino.co.in

HYSTRA
hybrid strategies consulting

Providing financial services through mobile phones in Kenya

Executive Summary:

▪ **Organization:** Safaricom is the leading provider of converged communication solutions in Kenya.

▪ **Project:** M-PESA is an innovative mobile transfer solution that enables customers to transfer money, without needing a bank account, to other M-PESA or non-M-PESA users via a simple interface. It was launched early 2007 and has reached more than 13 million customers within 3 years.

▪ **Innovation:** Though not the first of its kind, M-PESA is an innovative mobile money service in that its business model – simplifying the end-user experience – allowed for viral spread. Key "innovative" features contributing to its success include the absence of registration fees, deposit fees, and minimum balances, the use of a simple user interface, and the technical possibility to send money to anyone, even non-registered M-PESA users, with a tariff structure that encourages non-registered users to register as well. Today M-PESA is innovating through the provision of new services (such as linking to bank accounts) that most mobile financial service providers are not yet offering.

▪ **Sustainability:** M-PESA is a flagship example of a mobile service used at large scale. It has been used by 38% of the Kenya population with indirect impact reaching 75% of the population. It relies on a simple to use application from an end-user perspective combined with the branding, market penetration (80% market share) and pre-existing reach (network of 23,000 M-PESA agents) of Safaricom. In FY2010, M-PESA generated $94 million in revenue for Safaricom, amounting to 9% of total revenues for the company. While it solves an urgent social problem and seems to be financially sustainable, very specific conditions made the Kenya introduction a success while other replications have yet to be successful.

Converting efloat[80] to cash

Project current status

- **Date of creation:** March 2007

- **Product / service delivered:**
  - Small-value electronic payment and store of value system, accessible from ordinary mobile phones
  - Person to person (P2P) payment, financial inclusion (people without bank accounts and non M-PESA users can receive money via M-PESA)
  - Value-added services make M-PESA a mobile payment platform (Pay Bill, Buy Goods, M-ticketing services and the M-PESA Prepay Visa Card)

- **Customers:**
  - 13m registered customers in early 2011 (majority active)
  - 73% of Safaricom's customer base, 54% Kenyan adults, 31% of entire population
  - Early adopters: primarily banked customers or rich urban dwellers

- **Competitive landscape:**
  - *Substitution before project:*
    - Bank branches: 840 at time of launch; too limited to compete with M-PESA's 23k cash-in/cash-out outlets
    - Post office branches: Costly, slow, and prone to liquidity shortages at rural outlets
    - Informal bus and matatu (shared taxi) companies: Not licensed to transfer money, resulting in considerable risk of theft
  - *Competition:* Mobile banking services by other operators

- **Partners involved:**
  - *MNCs:* Project developed by Vodafone, launched commercially by affiliate Safaricom
  - *Government:* Closely monitored and regulated by the Central Bank of Kenya
  - *Aid agencies:* Department for International Development (DFID) through its Financial Deepening Challenge Fund: Initial funding for early market exploration survey and first Vodafone experiment worth $1.5m (£910k, 48% of total initial funding, rest from Vodafone)

- **Technology aspects:**
  - *APIs (Application programming interfaces):* Under development, thus not open to 3rd parties
  - *At end-user level:* SIM Application Toolkit STK using SMS bearer[79], simple user interface loaded on phone, available on main menu
  - *Training needed:* None for end-users
  - *Maintenance:* Virtually none from end-user perspective

- **Business design:**
  - *Marketing:*
    - 360-degree marketing campaign at launch
    - Flyers distributed on the market in early stages
    - Link between M-PESA brand and Safaricom's strong corporate brand: Store painted "Safaricom green"
    - Simple and clear value proposition: Motto "Send money home", based on Kenyan phenomenon of split families and local diaspora
    - Viral marketing: Possibility to send money to non M-PESA users, but better tariff rates for registered customers, incentivizing registration

---

[79] SIM Toolkit SMS bearer. An SMS bearer is an application that transmits SMS requests to a mobile phone.

- Standardized experience: Visibility of brand, tariff poster, availability of cash and M-PESA electronic value at local agents
- Customer feedback loop: Call center (via phone for customers, via phone or email for agents on separate agent support line)
- *Distribution:* Two-tier structure with individual stores (called "agent store") under supervision of master agents (called "Agent Head Offices" or HO)
  - *At customer level:* 23k agent outlets for cash-in and cash-out, nearly half located outside urban centers
  - *At retailer level:* 2 possibilities to recharge fund:
    - Electronic request from agent to M-PESA holding account. No commission, but 4-6 hours before transaction is effective
    - Agent cash request from super agent (managing liquidity for several agents), for minimum $350 (KSh 35k). Flat commission: $1 (KSh 100) for less than $4k (KSh 400k), 4% commission above $4k
- *Pricing:*
  - No customer charges for SMSs that deliver the service
  - Fees applied to actual customer-initiated transactions, computed to make service profitable (pay-as-go pricing model)
  - Flat rate, uniform nationwide, stable since inception except 3 changes below
  - Modification:
    - Increase price for balance inquiries to avoid overly burdensome volume of requests from initial low price
    - Increase price for PIN changes to avoid customers forgetting their PIN
    - Transaction bands review (lower limit $0,5 (KSh50), upper limit $0,7k (KSh 70k) to cater to both low and high end-users. Daily transaction limit increased to $1,4k from $0,7k (KSh 140k)
  - Interest earned on deposited balances must go to a not-for-profit trust and cannot be appropriated by Safaricom or passed on to customer
- *Cost and revenue split:* Agents earning a commission paid by users. Risk of robbery borne by agents (no insurance from Safaricom)
- *End-user payment:* Borne by person who initiates transaction: Flat fee of $0.4 for person-to-person (P2P) transfers and bill payments, $0.33 for withdrawals (for transactions less than $33) and additional $0.30 for non M-PESA withdrawers, and $0.013 for balance inquiries
- *Retailer financing:* Fee paid by Safaricom each time they exchange forms of liquidity on behalf of customers. No direct fee from customers

▪ **Regulatory aspects:**
- M-PESA accepted by Central Bank of Kenya
- Approved security features of technology platform
- Limited transaction size to avoid money laundering:
  - Maximum amount in M-PESA account: $1.25k (KSh 100k)
  - Maximum amount per transfer: $875 (KSh 70k)
  - Maximum amount of daily transfers: $1.75k (KSh 140k)

▪ **Monitoring and impact measurement:** No social impact assessment but:
- Anti-money laundering system on digital transaction
- Transaction recorded manually at retailer level

▪ **Awards:**
- 4 time winner of GSMA Awards:
  - 2008 – Best Broadcast Commercial, 2008 – Best use of Mobile for Social and Economic Development
  - 2009 – Best Mobile Transfer Service
  - 2010 – Best Mobile Transfer Service
  - 2011 – Best Mobile Money Service for the Unbanked
- 2007/2008: Kenya Banking Awards, Product Innovation

- 2008: World Business & Development Award, Contribution towards millennium goals
- 2008: Stockholm Challenge, Economic Development Category
- 2008: Africom Awards, Best Business Solution for Rural Services
- 2009: UN-Habitat Business Award, Best Business Practices
- 2009 and 2010: Mobile Content Award, Best Mobile Transfer Service

- **Future plans and next steps:**
- In May 2010, M-KESHO service launched as joint venture between Equity Bank and MPESA:
  - Equity Bank account for M-PESA users, linked to M-PESA mobile wallet
  - Over 455k accounts opened in 3 first months, 600k after 4 months
  - Same fee as for M-PESA transfer
  - Increased use of M-PESA for in-store purchases through the Buy Goods Service and M-PESA Prepay Visa Card
- Other services built on M-PESA:
  - Kilimo Salama, insurance policy
  - Grudfos Project – Payment of borehole water using M-PESA in arid/semi-arid Kenya

M-PESA Advertisement

[80] *"Formally, in exchange for cash deposits, Safaricom issues a commodity known as "efloat", measured in the same units as money, which is held in an account under the user's name.", The Economics of M-PESA, Jack William, Suri Tavneet, August 2010*

HYSTRA
hybrid strategies consulting

IS THE PROJECT:

1/ SOLVING THE PROBLEM?

- **Problem magnitude:** Only 10% of Kenyan population with financial services before M-PESA

- **Solution provided:**
  - *Quality:* For user: Simple mobile phone application enabling digital financial transaction combined with physical network of cash retailers. For retailers: Easy to use web-based interface
  - *Comprehensiveness:* Initially only for money transfers, now offering additional financial services and payment platform (saving account, etc.)

- **Scale and reach:**
  - About 13m customers after 3 years (~40% of population of Kenya)
  - Used via Safaricom network: 80% of market, 23k cash-in/cash-out points

- **Acceptance and usage:**
  - *Acceptability:* Facilitated by simple and stable pricing
  - *Usability:* Facilitated by simple user interface and vast agent network
  - *Customer trust:* Facilitated by:
    - M-PESA call center handling complaints
    - Instant SMS confirmation of transaction for customers
    - All cash-in/cash-out transactions recorded on paper

- **Socio-economic impact:**
  - "Banking the unbanked": Enabling most Kenyans to realize financial transactions, including 1.9m previously unbanked customers in 2009
  - Emergence of local entrepreneur/retailer

2/ ECONOMICALLY SUSTAINABLE?

- **At BoP end-user level:**
  - *Initial cost:* Access to a basic mobile phone
  - *Direct cost of services:* $0.4 for bill payment, $0.7-1.0 for P2P transfers, $0.013 for balance inquiries
  - *New economic benefit:* Money saving due to limitation of transportation cost and less risky money transfer
  - *Ability to reach the poorest:* 21% of BoP users with a mobile phone,
  - 18% of them using M-PESA

- **At local organization (agent) level:**
  - *Initial investment:* $1.6k (12 times more than to simply sell airtime), including efloat tied up at all times
  - *Profit:* $5/day (3 times more than simply selling air time) for average of 86 transactions/day
  - *Cost recovery level:* Covering opex from ~30 transactions/day

- **At project level:**
  - *Revenues FY2010:* $94m (9% of company revenues), more than double compared to FY2009 $37m
  - *Cost recovery level:* Profitable (18% of Safaricom profit in 2010 according to CGAP estimates)
  - *Initial funding:* $1.5m (£910k) grant from DFID, $1.6m (£990k) investment from Vodafone

3/ SCALABLE AND REPLICABLE?

▪ **Pre-requisites / requirements for the project to scale:**
• Simplifying user interface
• Engaging intermediaries to help manage individual stores (recruitment of agent)
• Ensuring that outlets are sufficiently incentivized to actively promote the service
• Maintaining tight control over customer experience and integrating feedback into new services
• Developing several different methods for stores to re-balance their stocks of cash and e-value
• Low and transparent airtime commissions for affordability and trust

▪ **Additional requirements/ pre-requisites for the project to replicate:**
• Strong latent demand for domestic remittances
• Poor quality of existing alternatives
• Supportive banking regulator and legal framework to enable a mobile operator to manipulate money
• Reasonable size of retailer network to reach isolated users
• Sufficient literacy of end consumers

Exchange rate considered for this study: 1 KSh = USD 0.01

Sources:
Phone interview with Okari Alvin and Nyambura Everlyn on January 26, 2011

Branchless Banking 2010: Who's Served? At What Price? What's Next?, CGAP, Available at:
technology.cgap.org/technologyblog/wp-content/uploads/2009/09/M-Pesa-agent-economics-cgap-2009.pdf

Mobile Payments Go Viral: The Story of M-PESA, Ignacio Mas and Dan Radcliffe, part of the "Yes Africa Can: Success Stories from a Dynamic Continent" series from the World Bank, April 2010

Mobile Phones and Economic Development in Africa, Jenny C. Aker and Isaac M. Mbit, Center for global development, January 2010

Proof mobile money can make money? M-PESA earns serious shillings for Safaricom, Mark Pickens, CGAP, June 7, 2010, Available at:
technology.cgap.org/2010/06/07/proof-mobile-money-can-make-money-M-Pesa-earns-serious-shillings-for-safaricom/

The Economics of M-PESA, Jack William, Suri Tavneet, August 2010, Available at:
www.mit.edu/~tavneet/M-PESA.pdf

The truth about Mobile banking in Africa, The Guardian Technology Blog, Available at:
www.guardian.co.uk/technology/blog/2009/aug/14/mobile-banking-africa-mpesa

Contact person for the project:
Okari Alvin, Senior Manager M-PESA Product Development at Safaricom

HYSTRA
hybrid strategies consulting

OTHER EXAMPLES OF MOBILE MONEY SERVICES[81]

Globe GCASH and SMART Money: Two of the oldest mobile money services, launched respectively in 2003 and 2004 in the Philippines.
- *Service offered:* Money transfers, payments and remittances
- *Innovative uses:* Wide network of local and international partners that includes government agencies, utility companies, cooperatives, insurance companies, remittance companies, universities, and commercial establishments which have agreed to accept GCASH and SMART Money as a means of payment for products and services
  - Payment facility and other features already accessed over the internet in addition to SMS
  - GCASH: Partnership with PayPal
  - SMART Money: Partnership with MasterCard
- *Reach:* 1.1m and 8.5m registered clients respectively (number of active users is reportedly lower) with the potential to be able to activate the service for all SIM users of Globe and SMART
- *Distribution channels:* In addition to traditional airtime resellers in the Philippines, SMART Money and GCASH expanding their network to include financial institutions
- *Cost for end-users:* Money transfers at cost equivalent to that of SMS. International remittance fees up to 80% cheaper than traditional remittances. Encash fee charge of at least 1% of encashed value for both SMART Money and GCASH
- *Competitive landscape:* Strong competitive alternatives to mobile payments, including an extensive and efficient semi-formal retail network of pawnshops, which offer transfer services as low as 3% commissions
- *Challenges:* Low level of marketing and lack of availability of agents today: Rapid uptake initially but slow increase in adoption over the past years.

Orange Money: A recent initiative by Orange launched simultaneously in 7 countries of Africa (Cote d'Ivoire, Senegal, Mali, Niger, Madagascar, Kenya, Botswana), with plans for roll out in all Orange AMEA countries in 2012
- *Services offered:* Banking, money transfer and payment services
- *Innovative uses:* In Madagascar: payment of retirement pensions of a mining group. Niger: WFP and UNDP interested in transferring subsidies via Orange Money
- *Reach:* 2 million subscribers (May 2011) in a little more than a year of operations
- *Distribution channels:* 2-level system:
  - Wholesalers: In charge of managing the points of sale and making sure that distributors have enough e-money and deal correctly with the cash in store. Paid commissions on Orange Money transactions in their territories.
  - Retailers: Performing the transactions. In addition to traditional points of sale of the operator, certified agents positioned in strategic locations, such as in well-known money transfer corridors or post offices, and bank branches. Often involved in other economic activities beside Orange Money
- *Cost for end-users:* Free subscriptions (however a minimum deposit on the account is often asked to activate the service and allow the customer to perform its first transactions), free money deposits and payment services. Fees for cash withdraw operations and money transfer services
- *Marketing:* Street sales force animations to inform, educate and facilitate subscription to the service.

---

[81] *Sources: For number of users: GSMA Mobile Money Deployment Tracker, 2010. For SMART Money and GCASH (except number of users): internal sources, Jojo Manansala, General Manager of Hybrid Social Solutions Inc. For Orange Money data: Orange internal sources.*

A customer uses his GCASH to pay for his purchase in a local neighborhood store

A GCASH subscriber performs a cash-in transaction in one of Globe's sub-distributor outlets

8. Agriculture

Summary

In agriculture and rural development, a variety of fairly large-scale and mature ICT-enabled projects demonstrate economic stability and provide social and economic value all along the agro-value chain by filling the information gap for small farmers. Such projects, directly linked to income-generating activities (for example providing better selling opportunities for agro-products and increasing yields through crop expert advice, potentially increasing farmers' income up to several times), have visible direct economic value for end-users, which may explain why people are ready to pay for them. The largest projects have impact on up to several million rural dwellers, while benefitting all actors of rural development (not only farmers but also agro-product companies, NGOs, etc.).

The main challenge in this area is to create local information that reliably answers local needs – providing the right information at the right time in the right place and making it reliable and trustworthy for farmers to use it.

The opportunity seems to lie in developing a range of synergetic services centered on farmers' needs. Additional developments could include notably crop and health insurance, and the set up of efficient supply chains leveraging ICT and the existing local agent networks in place to deliver goods in addition to information.

Agriculture remains the main source of livelihood for 50-90% of the population in emerging countries, i.e. around 2.5 billion people worldwide.[82] As an economic activity (as opposed to healthcare or education discussed later in this report), agriculture is directly linked to income: impact can be directly measured in economic gains for end-users. Additionally, rural areas are obvious places to implement ICT4D projects, because in these places access to information and other services that ICT can channel is often scarcer than in urban areas. ICT can bring remote services otherwise inaccessible to rural inhabitants.

For these two reasons (direct economic impact and access granted to otherwise unavailable service), ICT-based agro-services often have a clear value for farmers. For example, a farmer who saves days of work from transportation to the market by receiving crop prices on his phone, or who sees his harvest survive following an expert advice received in an internet kiosk, may well be willing to pay more than the cost of an SMS or communication for the information received.

Yet the total potential economic benefit and market size of ICT for agriculture (ICT4A) are hard to estimate. From the anecdotal evidences gathered by the cases studied in this report, ICT4A can increase farmers' income by 5%..., and up to 400% in the best cases: a very wide range. In terms of market size, estimating very roughly that all farmer's families, around 500 million households, would be ready to spend $20 annually (corresponding to RML annual subscription fee) on services that would bring them such an income increase, ICT4A could represent a $10 billion market annually for information only – and potentially much more for additional services.

Interestingly, agriculture is a domain in which there is a lot of common vested interest. Not only farmers and ICT service providers, but many other players such as agro-input providers, purchasers of agro-products like supermarkets, FMCG companies or any other entities serving rural areas, can benefit from ICT-based improved information and logistics, as seen in the cases of this report. There is much to bet that the potential market of ICT4A could be fueled by the willingness to pay of all these players rather than the BoP alone, and that the rough estimate of $10 billion quoted above is thus a minimum. Rural development as a whole sector could benefit from the synergetic efforts of so many stakeholders with converging interest.

In this study, 53 out of the 280 projects identified had an agricultural component, out of which 30 were market-based and still running. They intervene at all levels of the agro-value chain, as shown in the graph below.

[82] *London International Development Centre, 2011 and Hystra analysis*

The role of ICT in agriculture and its impact on the BoP

Decision on crop to plant	Sourcing of inputs	Cultivation	Sales of ouputs	Monitoring of farmer's data
▪ **Info on demand for crops** ➥ Cultivation of higher value crops ➥ Better supply-demand match	▪ **Info on best practices and expert advice** ➥ Better choice of inputs		▪ **Info on market prices and demand** ➥ Choice of place to sell ➥ Lower transaction costs and overall better price obtained for outputs ▪ **Aggregation of farmers for grouped sale** ➥ Access to larger buyer, guaranteeing purchase	▪ **Data on farmer's income** ➥ Construction of credit history, allowing farmers to access loans ▪ **Data on farmer's harvests** ➥ Better linkage between research/NGOs/governments and farmers
	▪ **Info on prices and availability of input** ▪ **Aggregation of farmers for purchase** ➥ Purchase at lower costs ▪ **Direct order for inputs** ➥ Guaranteed authenticity of inputs	▪ **Weather forecast** ➥ Better agro-practices ➥ Higher productivity ➥ Higher crop quality		

Legend

▪ **Service provided by ICT**   ➥ Corresponding impact on the BoP

8.1 ICT bring benefits to all actors of rural development while filling the information gap for small farmers

ICT has the power to link small farmers to the global economy, in a win-win situation. As a result, businesses as well as grassroots organizations have initiated ICT4A projects. Projects initiated by large companies with a vested interest in the rural market include eChoupal, started in 2002 by the agro-division of large Indian conglomerate ITC to lower transaction costs and improve the quality of agro-commodity sourcing, that has set up 6,500 computer agro-kiosks throughout India, for farmers to access local market prices, agro-advice and other agro-related services.[83] Also in India, Reuters launched Reuters Market Light (RML) as a new revenue stream, providing weather and local market price information as well as agricultural news through SMS to several hundred thousand people.[84]

Grassroots social businesses have also taken the lead in some initiatives: Esoko is a young company providing real time local market information (price, inventory levels) to small farmers and SMEs in rural locations of Africa, as well as a bid/offer matching service in 15 countries.[85] As of 2009, the new initiative eKutir has started entrepreneur-led rural hubs equipped with at least a laptop and mobile phones, also providing market prices and a whole range of other agro-services to rural populations.[86]

Finally non-profit entities have initiated ICT4A projects: CKW (as a project of Grameen Foundation) provides farmers in Uganda with a new income opportunity via data collection as well as individual agro-advice for the farmers that participate in the surveys.[87] Another example is Digital Green, an NGO working in India to disseminate agricultural information and expert advice on agro-practices via videos.[88]

---

[83] *See eChoupal case study on p.88*
[84] *See RML case study on p.64*
[85] *See Esoko case study on p.41*
[86] *See eKutir case study on p.95*
[87] *See CKW case study on p.118*
[88] *Digital Green records movies on farming best practices locally, and then broadcast them in neighboring villages to farmers' groups. All material (DVD, TV sets and cameras) are entirely funded through grants. In Q1 2011 it was active in 400 villages involving 26,000 farmers, with 1,300 videos produced and 21,000 screenings organized since the beginning of its activities in May 2009. For more information, see www.digitalgreen.org*

HYSTRA
hybrid strategies consulting

A story from the field on the impact of eKutir on farmers and their suppliers in India, by Srinivas Garudachar

eKutir's eHub

"In one of the villages where we started working, farmers were accustomed to buying fertilizer from a local retailer. After we set up our internet connected kiosks, and due to the good work observed, we got "preferred" deals from the fertilizer manufacturer as we were recommended by the government as a social business initiative helping farmers. The supplier sold us his product at cost, a lot cheaper than his usual prices. And we thus started offering farmers fertilizers with a minimal markup, at a very attractive price (compared to the local retailer).

Yet after a few weeks, farmers were not buying from us, so we asked them what was wrong. They said that the local retailer had lowered his price and was now 10 rupees cheaper than us on similar products. This did not make any sense economically speaking: the retailer could not be profitable by selling at a cheaper price than us, who had the best possible deal with the supplier. This meant he was either voluntarily making a loss on these products, or that he was selling spurious or contaminated products at a huge margin! The fertilizer company conducted an investigation and the products sold by the retailer were spurious. They found that the bags that he was selling had only one stitch instead of the standard three stitches for genuine products, that some bags had an expiration date of 2007 (well past!); and finally, that the original content of the bag (phosphate) had been mixed with salt, which is not a fertilizer but even worse than that, can be very detrimental to agro products and soil health. When the villagers learned this, they got understandingly very upset against the local retailer whom they had trusted all this time. Today, this retailer has understood his mistake and is applying to become one of our franchisees. We have deferred the matter of his franchise selection to the community leaders, for they are the customers that he would need to manage on a day-to-day basis.

For the first time, the down trodden farmers are able to not only get a much needed cost-effective product in a convenient, timely and transparent manner, but they have also found a means to weed out unjust and unscrupulous practices perpetrated by the seemingly "wealthy and powerful" who had till date been their only supply line."

8.1.1 Bridging farmers' information deficit and linking them to the global economy

In the cases studied in this report, ICT fills previous gaps in farmers' needs, offering the following services:

8.1.1.1 Specialized and localized information (weather, soil conditions, price in neighboring markets, or locally suited agro best practices)

Farmers who own – or have access to – a mobile phone can receive such information directly via SMS through services such as Esoko in

" There is a lot going on in agriculture using ICT4D, because in this field, simply sharing information pays in itself."

R. Short, USAID Resident Project Director (ICT for Development)

Ghana or RML in India, or through helplines such as Ken Call "Huduma Kwa Wakulima" in Kenya[89] (similar to HealthLine in terms of business model) or IFFCO IKSL in India[90] (where agro-information voice messages are left to farmers every day, coupled with a helpline for complex issues). Other businesses like eKutir or eChoupal in India offer these services via an agent connected to the internet, or equipped with a smart phone in the case of CKW in Uganda. eKutir is now working on developing a YouTube©-like channel for locally recorded movie on farming best practices, such as the ones developed by NGO Digital Green.

---

[89] For more information, see www.kencall.com/index.php/site/kenya_farmers_helpline
[90] For more information, see www.iksl.in

8.1.1.2 One-on-one expert information and advice (irrigation, pest control, cattle healthcare, soil analysis, and other agro-practices).

eKutir, eChoupal and CKW are providing such services, either via live interaction with experts through Skype or other teleconference system, or with email queries answered within a few days by remote specialists. Such a service cannot be worked out through a "direct access model" as it necessitates more than a simple text or voice platform.

8.1.1.3 Aggregation of small farmers' bargaining power for sourcing of agro inputs (seeds, fertilizer, etc.), or for selling of outputs

ICT is then either a powerful tool to support existing cooperatives or a reason for new ones to come together and leverage the power of numbers. Here also, simple SMS or direct voice services are not sufficient tools: a single aggregator must physically gather farmers' individual supply and demand, then be the point of contact for buyers or sellers. Local agent models such as eChoupal, eKutir and CKW have the adequate infrastructure for this.

> " M-Agriculture is a real business opportunity for operators and farmers."
>
> C. Locke, Managing Director of the GSMA Development Fund

8.1.1.4 Match making with buyers

The agro-business unit of ITC, the Indian private company that launched eChoupal, announces every day the quantity it wishes to buy and the corresponding prices to its eChoupal kiosks. In turn, informed farmers decide whether they want to accept ITC's offer, depending on their expectations of the price of the day at local markets. Other initiatives cover a wider share of the agro-business industry: ACDI VOCA, a USAID backed project, helps several Indian supermarkets source their products through intermediaries equipped with smartphones, who sends text message alerts to local farmers.[91] Both eChoupal and ACDI VOCA are coupled with physical supply chains that allow not only information, but also products to flow more efficiently, resulting in shared gains both for large buyers and small producers of agro-products.

8.1.1.5 Translating and standardizing information between farmers' traditional measurements and those used by merchants

Esoko in Ghana collects local markets prices on a variety of commodities. These prices are often expressed by local actors in a variety of measurement units ranging from "bags" to Kg, and not easily translatable, giving opaque gain opportunity to traders. Esoko translates the information into the unit that each service subscriber

is familiar with. Prices are also often dependent on the "grades" and "calibers" of the produce (e.g., moisture content, shape, color). Esoko offers its subscribers information on this type of price-impacting data as well. Similarly, Akashganga in India has developed simple IT tools that allow to measure milk weight and fat content and display electronically the fair price to pay to farmers (which depends on both factors).[92] Several Indian mandis (local bulk markets) are now equipped with ICT systems that register the weight of merchandise and auctioned price at one point of the market and send it via intranet directly to the payment center, facilitating the process as well as avoiding potential cheating at the various points of the chain.

8.1.1.6 Gathering data on local farmers.

Research institutes (in the case of eKutir) or multilateral institutions (in the case of CKW) learn on local practices through data gathered by the local ICT agents and can better link their programs to local needs. Besides, financial institutions get an understanding of farmers' income and spending through data channeled via ICT, and can offer them customized financial services (e.g. loan) based on this knowledge.[93]

8.1.2 Benefits for farmers

The direct results of these various ICT services for farmers are:

- **Improved productivity** due to weather/soil information, valid agro-advice and enhanced sourcing of quality inputs

- **Lower costs** due to better-informed use of inputs, decreased or avoided transaction or transportation costs, as well as aggregated transaction with improved bargaining power

- **Higher price received** for agro-outputs due to fewer intermediaries, larger choice of locations to sell with knowledge of the corresponding prices, and improved bargaining power as an individual farmer as well as through collective ICT-enabled trading

- **Less product loss** in spoilage, unsold items, or bad measurements due to better information on where and when to sell or store, and more accurate IT-enabled produce measurement

- **Access to new products and services** via improved or newly created supply chain, or thanks to data gathered (e.g., income profile used as a basis for loans).

---

[91] For more information, see for example www.acdivoca.org/site/ID/IndiafreshConnect
[92] For more information, see akashganga.in
[93] eKutir plans to implement such as service.

Altogether, through such ICT-enabled agro-services, farmers increase their income and gain empowerment through better understanding and enhanced capacity to act on their farming ecosystem. In the cases studied here, ICT4A increased farmers' revenues by 10% from knowledge of prices limiting intermediaries' margins (eChoupal), by 5 to 25% from weather, crop and price information (RML), by up to 40% in some cases for better access to markets and links with buyers for Esoko, and in an anecdotal evidence, by up to 400% from the whole range of agro-services provided by eKutir.

8.1.3 Benefits for other actors along the agro-value chain

Significant gains for the businesses/organizations involved in the agro value chain, mirror these ICT4A-induced results that benefit farmers:

- ICT-enabled agro-services providers (e.g. Esoko) earn subscriptions revenues from farmers and agro-related businesses

- MNOs earn revenues from providing either directly value-add services for farmer customers, or the media that conveys that service

- And finally traders, agro-manufacturers or retail businesses save costs and serve more clients from improved information and improved logistic chain.

A story from the field on the impact of CKW on farmers and their willingness to pay, in Uganda

"Most people are not interested in paying for agro-tip service until they see the tangible benefits from it. Some farmers have expressed willingness to pay for CKW services after repeat usage of the content and application of advisory that saved their income sources, such as the story below.

In Kapwata parish, into the slopes of mountain Elgon, a farmer faced a big loss. One of Saulo Mwanga's goats developed a disease he had not seen before — boils on the skin. He feared he would lose it. This was a very unfortunate possibility because, as he says, "when you lose one goat, you have lost about sh100,000" (or $50). Fortunately, he had an idea about where he could get help. He had been consulting Alfred Chepsikor, his area's CKW, for routine farming information such as market prices and weather forecasts. He knew Alfred might have an answer for the goat problem, and indeed he did.

Chepsikor searched his phone and saw the same symptoms described in a piece of information about goat diseases. Accompanying the symptoms' description was a suggestion on what drugs the farmer could use to treat the goat. Though neither of the farmers knew the drug, they wrote it down on a piece of paper that Mwanga brought to his local agricultural input stores. Mwanga even went across the border to nearby Kenya to find the drug he had been advised to use. The goat is completely healed now."

8.2 Challenges

8.2.1 Getting the data right… and convincing clients to pay for it

eKutir, eChoupal, RML, Esoko and CKW, all mentioned the initial questions that their target audience had regarding the accuracy of the data offered and the reliability of the provider. The challenge was two-fold: 1) ensuring quality sourcing of data and 2) convincing users of it.

To solve the first issue, RML or Esoko do in-person reporting at local markets for prices (then verified centrally); RML also partners with meteorological stations for weather information, which represents significant HR and data costs.

The second issue, convincing users, requires robust marketing. The objective is to overcome the lack of knowledge and trust of farmers regarding ICT itself and ICT-enabled service benefits, as well as the risk aversion of farmers. Understandably, they are not ready to risk their harvest – their only means of subsistence – by trying out new practices promoted by new services, unless they have already seen it work. One option that seems to work at eliciting trust is to provide the service for free for a trial period, until clients see the actual benefits of their investment (first subscription to basic package is free in the case of RML; eChoupal uses a demonstration plot to show the results of the techniques it promotes and offers the ICT hardware for free to villagers; CKW service is provided for free at this stage, but has seen villagers' expressed willingness-to-pay increase after the service proved useful). eKutir,

on the contrary, builds trust in the farmer community by architecting the services with them. There is an element of community ownership through participation in business decisions (even the pricing of the service is discussed with farmers), that ensures the stakeholder buy-in that is so crucial to a rapid business uptake and sustainability of the success of the business.

8.2.2 Scaling up exact, localized, up to date and timely service

For farmers, information on weather, soil condition or price must not only be accurate to be relevant, but also has to correspond precisely to their own situation, both in terms of time and geographic specificities. Market prices "shelf life" is extremely short, while weather forecast must be delivered on time for a farmer to act on his culture before the prediction materializes.

To overcome this challenge, RML and Esoko propose their subscribers to register their preference in terms of crops they wish to get data on, and times when they prefer to receive the information, granting them tailor-made service. In the case of RML price information is gathered by "market reporters" everyday in each market, while 1.8k weather stations partner with RML for daily weather reports in a 50km radius to targeted farmers. Yet, there is an inherent challenge in the wish to provide localized and scalable information, as – per definition – localized information will differ from place to place. The solution is to have "local scale", i.e. a sufficient number of users paying for the same information in order to recoup its collection costs. Typically, in the case of RML, covering the costs of one "market reporter" alone takes at least 100 clients. It is thus essential for financial sustainability to achieve sufficient density in a given place first, before expanding to new places.

8.2.3 Scaling up the corresponding technology back-end

The challenge then, as experienced by RML, eKutir, CKW and Esoko, is to have a scalable back-end to deal with growing numbers of users. Setting up the proper technology and database structure has required at least one or two years for all cases seen here, but once achieved, and if the necessary trust and awareness of the service are in place, scale up is considerably eased. For instance, financial institutions are now advising farmers

> "Rural farming populations tend to be very risk averse. They will not be willing to put at risk their harvest for the year, and thus their very subsistence, even for the promise of doubling it next year thanks to new practices. Any effort introducing new practices, including ICT-based, needs to plan for how to be sure that the population understands the value it holds for them, and that there is little chance for negative impact. Many development initiatives have failed for not doing this."

Andrew Baird, RTI Senior Economic Growth Specialist

to subscribe to RML services as their local experience convinced them that the consecutive increase in farmers' income decisively helped them repay their loan.

8.3 Promising ways forward

All our case studies in ICT4A are slowly but surely expanding their offering to keep up with demand. Farmers themselves have grown their trust in these initiatives and progressively requested new services. In the case of eKutir, eChoupal and RML for example, farmers notably asked to receive international commodity news to be able to better apprehend price surge or slump based on droughts or large harvests in other parts of the world. In addition to new types of information, farmers could benefit from ICT-optimized logistics and ICT-based insurance, two services rarely provided to date.

8.3.1 Logistics and supply of goods

ICT can go a step further than connecting purchasers and buyers: it can help optimizing stock management and transportation across the value chain, from farmers' fields to local and urban markets. Real-time information on where products are and how long they should be stored could potentially save significant volumes, through data-driven management of transportation fleet and storage spaces. There is considerable value at stake as for instance, there is an average of 15% (up to 22% depending on crop and country) "post harvest loss" for main cereal in Africa every year (due to logistic inefficiencies in storage and transportation).[94] ACDI VOCA has started following that route while eChoupal is considering a similar move. Drishtee, though not initially focused on agriculture, is using its rural network to profitably provide such improved logistic services to the villages it serves.

8.3.2 Insurance

Another missing piece in the agro-sector is insurance. Considering that the main three risks for farmer households' revenues are crop hazard, disease and death, crop, health and life insurances could have considerable value for small farmers. However, these three products have traditionally been considered by insurers as too risky and too costly to serve in a rural setting. One insight of this study is

---

[94] *See EU website on Post Harvest Loss: http://www.aphlis.net/index.php?form=losses_estimates*

that ICT-enabled services – specifically those developed for farmers and the rural areas – could simultaneously bring to the insurer a viable means of improving his prospect's risk profile. Indeed, ICT4A expert advice, weather information and best practices mitigate the risk of farmers' harvest loss, and thus improve farmers' risk profile vis-a-vis crop disease or weather hazard.

A few innovative crop insurance systems emerge. ICT-enabled micro insurance schemes have been developed –namely in India– based on the same kind of meteorological monitoring data used for the ICT4A services; crops are studied and meteorological/podologic standards are pre-established in the system which automatically triggers payment (without costly field expertise) when a meteorogical event is reported by the weather/soil stations (e.g. weather-Index-Based Insurances).[95] Projects such as Kilimo Salama ("Safe Agriculture") in Kenya are piloting crop insurance paid via mobile phone, leveraging the existing mobile money infrastructure.[96]

If insurers were willing to enter the rural space via ICT, they could leverage this new channel to offer the two other types of insurance most useful to farmers: health and life insurance. ICT-enabled remote healthcare can save days of work and income for farmers and avoid transport or healthcare expense, making health insurance schemes more easily viable for the BoP. Finally life insurance via mobile is also an emerging product, as shown by Ecolife launched in Zimbabwe in October 2010, and by Mi Life, launched by MTN in Ghana in March 2011.[97]

8.3.3 Synergies

Co-existing services have significant reinforcing effects on the farmers' benefits and income improvement. Impact on farmers' income seems more important when services are comprehensive (e.g., portfolio of eChoupal and eKutir services ranging from best practices sharing to weather info or expert advice through aggregated input sourcing or produce offer) and not limited to basic information. One service can be a basis for others, as in the case of data gathered on farmers' income by brokering their agro-transactions that can be leveraged for insurance or loan due diligence. Additionally there is a business interest in offering several services in one point. This is illustrated by organizations like Drishtee that over the years have broadened their portfolio of farming services and products to maintain their competitive edge.[98] Satyan Mishra, Drishtee's founder, stresses that *"it is clear that farmers go to the places that offer range, hence the strategic option of Drishtee to go by this market trend"*. Additionally, infrastructure, hardware and software (in particular data management systems), expensive to set up, can also be best leverage if several services ride on their backbone.[99]

Collective efforts could offer a bright potential for ecosystems of ICT4A services to emerge in a given territory: key strategic activities and services would have mutually reinforcing impact on farmers' revenue while the economics of such an effort would be improved by the densification effect explained above of increased revenues from each customer, based on more services provided.

---

[95] Index-based Insurance for agriculture in developing countries, United Nations, Sustainable Development Innovation Briefs, Issue 2, March 2007. Available at: www.un.org/esa/sustdev/publications/innovationbriefs/no2.pdf

[96] Launched by Syngenta Foundation for Sustainable Agriculture Kilimo Salama is an insurance designed for Kenyan farmers so they may insure their farm inputs against drought and excess rain. Registration is done via mobile phone and pay-outs happen as M-PESA payments. In 2010, 11,000 farmers were registered and 136 received a pay-out. See notably its analysis in Promise and Progress: market-based solutions to poverty in Africa, M. Kubzansky, A. Cooper, V. Barbary, Monitor Group, May 2011, available at www.mim.monitor.com/downloads/PromiseAndProgress-Full-screen.pdf

[97] For more details on Ecolife in Zimbabwe see www.econet.co.zw/eco/index.php?option=com_content&task=view&id=34&Itemid=52. For more details on mi-Life in Ghana see mmublog.org/blog/mi-life-mobile-microinsurance-in-ghana/ and www.itmag.sn/telecom/concurrence/ghana-mtn-lance-lassurance-vie-par-telephone-mobile-pour-les-plus-pauvres.html

[98] See Drishtee case study p.80

[99] See both "Direct access" section p.28 and "Local agent" section p.72 regarding the high investment cost of setting up such services

ASHOKA FULL ECONOMIC CITIZENSHIP

8.4 Conclusion: Opportunities in ICT4A

Given the potential economic and social impact of such clusters of services, the ICT4A sector appears as a very promising sector for new synergetic market-based approaches leveraging ICT. Such approaches could start with a focus on a specific territory. The aim would be to cover this geography with a comprehensive range of services, leveraging synergies and economies of scale out of a single platform servicing farmers. The platform would address holistically the economic and operational needs of farmers, with a goal of direct economic impact in the chosen rural perimeter. Each of the services needs to correspond to local specificities to be relevant, potentially necessitating partnerships with different local actors in each area to scale. This will require collaboration across sectors and actors to holistically fill the needs of farmers, including for insurance and logistics, a collaboration that seems feasible given the range of actors with vested interest in supporting rural development.

If such collaboration strategies for holistic local services are set up, ICT has a true potential for direct – and measurable – economic impact in agriculture and rural development. Though mostly anecdotal impact has been reported so far, the results seen in the various case studies are impressive, with incomes rising from 5 to 400% for clients of these agro-services.

Impact measurement will play as much a role in monitoring as it will in scaling up and replicating ICT4A initiatives, as a decision making tool. More research is needed to determine the true impact of ICT4A, measure synergies and prove the case for the ICT-based agro-ecosystem that seems to be the best way forward both for companies to recoup their investment costs to serve rural markets, and for farmers to derive most benefits from the use of ICT.

9. Health

Summary

Healthcare is the most dynamic sector of those studied in this report in ICT4D, but to date has mostly been financed by grants. Out of the more than 100 projects in ICT for health (ICT4H) identified for this study, only 20 were at least partly market-based and had survived the pilot phase. While donor projects were often focused on awareness campaigns or health data gathering and analysis, market-based approaches focused on remote diagnosis or drug authenticity verification. They serve up to a few million clients in the case of basic information, and several hundred thousand customers in the case of specialized remote diagnosis.

Key challenges in ICT4H include measuring its real impact on the health of patients who remain remote (to be able to conclude on its effectiveness), building awareness of ICT4H programs, understanding and training the new human resources needed for remote healthcare (combining ICT skills and medical knowledge), creating effective public-private collaborations with a regulatory framework that will allow for scale, and creating new ICT4H tools better-suited to BoP environment.

Promising ways forward include optimizing the efficiency of ICT4H projects that have already shown to work, and coupling ICT-based prevention to insurance schemes to leverage ICT at all steps of the health value chain.

Health is an obvious challenge for people at the Base of the Pyramid. Still today, the developing world is characterized by higher morbidity, higher mortality, lower life expectancy and poorer indices of quality of life than developed countries. The need for better healthcare service is clear: the World Health Organization notes critical healthcare workforce shortages in 57 countries — most of which are characterized as developing countries — and a global deficit of 2.4 million doctors, nurses, and midwives, reflecting billions of underserved people at the BoP.[100] The use of ICT in health can help directly address these shortages.

Healthcare spending around the world is exploding in developed and developing markets alike. With an expected $71 trillion globally by 2020 — an increase of more than 50% compared to 2010 — the greatest growth will come from emerging markets.[101] ICT is increasingly used in healthcare as a way to provide further reaching and better service. Mobile healthcare (m-health) was a

> " In M-Health, many programs are not sustainable. At the moment there are no proven business models that have scaled, but that doesn't mean that they do not exist."
>
> C. Locke, Managing Director of the GSMA Development Fund

$1.5 billion industry in the US in 2009, with the market expected to triple in five years.[102] The use of ICT for health (ICT4H) – especially cellphone and internet-based delivery approaches – appears as a promising way to provide service to remote and underserved populations at the BoP.

In the course of this study, healthcare was the sector where we found the largest number of projects (103 out of 280). However, we found that most health-related projects were not market-based: only 20 ICT-enabled healthcare projects showed a potential for financial sustainability, while improving healthcare in a sustainable manner for the populations at the BoP.

The ICT4H sectors in most emerging markets are still small. In 2000 there were very positive market projections indicating that the m-health market would soon become a billion dollar market, but it is only starting to take off today.[103] Indeed now that mobile connectivity has reached

---

[100] The World Health Report 2006: Working Together for Health, World Health Organization Geneva, 2006.
[101] According to PricewaterhouseCoopers report 2010; www.healthleadersmedia.com/content/FIN-260005/Healthcare-Spending-Poised-for-Global-Surge
[102] www.fiercemobilehealthcare.com/story/m-health-market-poised-rapid-growth-despite-fragmentation/2010-03-23#ixzz1HH4Mhoyn
[103] Research2Guidance m-health 2010-15 report, October 2010. Available at www.research2guidance.com/will-smartphone-apps-become-the-killer-application-of-the-m-health-market/

ASHOKA FULL ECONOMIC CITIZENSHIP

The role of ICT in health and its impact on the BoP

Awareness/Decision to seek care/ desire for primary/ preventive care	Local delivery of basic care	Advanced/ specialized care	Follow up care and long-term	Monitoring (patient cases, regional health data, drug authenticity)
▪ **Awareness on disease** ➤ Overcoming cultural taboos ➤ Avoiding epidemics spread ▪ **Information on patient condition** ➤ Awareness of basic remedial action ➤ Savings on (unnecessary) trip to doctors ➤ Best practice to manage general health (chronic conditions, pregnancies, etc)	▪ **Best practice info and advice on locally available remediation measures** ➤ Triage care ➤ Understanding of where more advanced care might be needed ➤ Savings on (unnecessary) trip to doctors ➤ Info on options for more advanced care ➤ Info on payment/ cost options	▪ **Advanced care delivered remotely and/or more efficiently at non-local venues** ➤ Treatment of more serious conditions ➤ Costs savings from more efficient care for patients, doctors, insurance companies, governments, donors ➤ Ability for scarce resources - doctors sophisticated equipment - to be used on more patients, improving health outcomes	▪ **Efficient remote follow-up** ➤ Better results post sickness/operation ➤ Quicker return to work, family, productive life ▪ **Aggregation of patients for group purchasing** ➤ Access to cheaper supplies, more and more affordable insurance, more investment in local infrastructure	▪ **Data to follow patient care by patient and in aggregate** ➤ Creation of dynamic patient records ➤ Improvements in health budgeting and improved spending of scarce resources ▪ **Verification of drug authenticity** ➤ Savings from spending on fakes ➤ Improved patient health

Legend

Service provided by ICT   ➤ Corresponding impact on the BoP   Not market based

---

more than 60% penetration in developing countries (compared to 5.5% in 2000), this prediction is more likely to be realized in the coming years, as the combination of growing population, pressure on health resources and wider use of cellphone and other data networks makes remote care easier and more cost effective.

9.1 ICT fills the need for health awareness, advice and follow up, while lowering cost of care

The main causes to the health issues faced by the BoP can be found in the following main factors: malnutrition-induced immunodeficiency, debilitation through a history of morbid episodes, lack of adequate treatments; installation of chronic conditions, exposition to food and water borne pathogens, environment-induced ailments (exposition to domestic and outdoor pollution), exposition to infectious diseases (human borne or endemic), "accidentogeneous" environment (road, work, home, violence).

All these medical causes add to a number of systemic failures in the prevention and/or treatment value chains for the BoP. Those failures of the health value chain can be grouped in 5 categories, all of which ICT can potentially address as seen in our study, leveraging solutions for

economically interested stakeholders:
▪ Information and cultural gaps,
▪ Infrastructure gaps and inconstancy of health professionals,
▪ Deficit in purchasing power,
▪ Lack of quality assurance and systemic healthcare management,
▪ And in a macro perspective: lack of a pro-BoP health policy and healthcare for the BoP as an economic sector.

9.1.1 Addressing information and cultural gaps via ICT

9.1.1.1 Lack of market-based initiatives in prevention

Prevention depends on hygiene and healthcare awareness and education, i.e information, and thus seems to be a "perfect field" for ICT to play a role. In the course of this study we came across numerous awareness or prevention projects notably on HIV/AIDS, tuberculosis (TB) prevention, anti-malarial bed nets, safe drinking water or cooking recommendations. Some of them reach an impressive scale such as POPTech project Masiluleke sending up to one million free HIV/AIDS awareness SMS per day to South Africans thanks to grants and in-kind donations,[104] but all of them were grant-based. Prevention can hardly find a business model on its own, if not coupled with insurance scheme for example.

---

[104] For more information, see poptech.org/project_m

HYSTRA
hybrid strategies consulting

9.1.1.2 Market-based approaches for simple yet personalized health information

Contrary to preventive information, simple immediately actionable health information have proved to be valuable enough for the BoP to pay for it. Such services use online resources and call-in services like HealthLine in Bangladesh. The approach makes basic medical knowledge much more accessible to patients and their families/caregivers who can simply reach out to doctors and other medical professionals using cellphones and – where available – online resources. A variant of the traditional phone "help-line", projects like HealthLine enabled patients calling a short code to get access to a doctor in a 3 minute call for $0.21, enough time to suggest a simple medicine for common ailments or direct them toward a practitioner if truly needed. More than 3 million people used the system in Bangladesh.[105] Another information system is that of mPedigree, enabling patients to check the authenticity of drugs they purchase via a simple SMS query from the point of sale.[106] In both cases, by providing information, technology helps patients get better care, avoiding them useless costs from unnecessary travel to a practitioner or from purchase of fake medicines, and demystifying primary health messages and interventions.

9.1.1.3 Overcoming the cognitive barrier via ICT

One particular barrier affecting people at the BoP is cognitive (a mix of education and culture): people at the BoP are frequently overly impressed by the modern healthcare system and their actors (embodied by the persona of the Doctor); as a result, they may shy away from it.

In other words, even people exposed to health information and with physical access to a healthcare facility may still not fully benefit from it, if the cognitive gap remains un-bridged. This is often more so, as one moves away from primary care towards higher and specialized standards of care.

ICT-enabled solutions have the potential to bring high-quality healthcare closer to the user while addressing that cognitive challenge: quality and specialization can be facilitated into a familiar setting via a local trusted practitioner. The Narayana Hrudayalaya Hospital (NHH) cardiology telemedicine network had hundreds of smallholder farmers consult NHH's Founder, Dr Shetty, in person through telemedicine. In fact, Dr Shetty consults from Bangalore a distant farmer who is being coached into the system by a familiar professional, in a health center known to him, strategically placed generally next to his village Post Office. This is an essential reason why the NHH Network became the largest cardiology telemedicine network globally to date.[107]

9.1.2 Bridging infrastructure gaps and inconsistency of healthcare

> " Telemedicine is a great way to improve care for low-income people, saving them time and money."
>
> Dr. Devi Shetty, Chairman and Founder of the Narayana Hrudayalaya Hospital

Due to deficits in healthcare infrastructure and personnel – frequent in emerging countries – the BoP often face both economic and geographical constraints to access health services. ICT solutions can help solve both challenges, by increasing the span of intervention of centrally positioned professionals (in secondary or tertiary health centers) who provide healthcare in deprived areas, via remote diagnosis and monitoring tools.

Remote diagnostics and telemedicine, aimed at getting basic treatment out to the village or BoP level, see increasing new technology developments and deployments directly in emerging markets. The NHH off-patient trans-telephonic electro-cardiogram, crank-powered fetal monitoring technology produced by FreePlay in South Africa[108] and the SensPack, a diagnostics suite in a backpack made by Sensaris that transmits vital data over cellphone lines at low cost[109] are just three of the thousands of innovative approaches aimed at moving data – instead of doctors or patients – as a way of bringing care to the poorest and most remote and lowering cost.

Another strength of ICT4H is that it increases the population's exposure to health professionals and thus the effectiveness of their guidance, as the compliance of their patients and the effectiveness of treatments rise with higher exposure to health professionals. This exposure is much needed when the economic, geographical and cognitive barriers faced by the BoP to access healthcare end up diminishing the presence of practitioners next to the BoP. As GSMA puts it, ICT has the potential of bringing "a doctor in your pocket",[110] multiplying interactions with health practitioners through *"e-presence"*, and thus improving their "share of the BoP mind".

---

[105] See HealthLine case study on p.49
[106] See mPedigree case study on p.57
[107] See NHH case study on p.103
[108] For more information, see for example maternova.net/health-innovations/freeplay-grid-free-crank-poweredfetal-monitor
[109] For more information, see for example www.prweb.com/releases/2010/10/prweb4594654.htm
[110] See www.gsmworld.com/documents/a_doctor_in_your_pocket.pdf

ASHOKA FULL ECONOMIC CITIZENSHIP

For instance, ZMQ is assisting the New Delhi's TB treatment centers in the close follow-up of their patients' treatments, imposing a visual observation of each patient's medicine intake during the 6 months of treatment. ZMQ developed an m-reporting system aiding the observers and centers to monitor treatment and data on their cohorts of patients, reducing "lost-of-sight" and improving patients compliance, through a considerably improved perceived presence by the patient and the observer. ZMQ's services are paid partially by the Public health service (often on UNAIDS budgets) on behalf of the DOTS Centers, and partially by pharmaceutical companies sponsorship.[111]

9.1.3 Reducing cost of care to address deficit in purchasing power

Low purchasing power of the population at the BoP creates obvious economic barriers to access healthcare, from access to doctors, hospitals and labs to medicines.

9.1.3.1 Reduced overall treatment cost through high volume and increased efficiency, allowing to serve the poorest

ICT offers opportunities for reduced costs: telemedicine not only overcomes the distance challenge and its induced costs, but it also allows to streamline the healthcare delivery system from diagnosis and triage[112] to treatment, reducing significantly the cost of a system commonly built around expensive resources such as trained medical doctors. NHH benefits from the high coverage of its telemedicine system in Karnataka, which ensures high utilization rates of its infrastructure but also screens out patients who do not need physical in-person care. This high volume permits to incorporate low paying patients into the system. This is one of the levers used by the hospital to finance their "tier pricing strategy", offering low fees to BoP patients. The hospital reaches breakeven via a combination of high volume/low price and low volume/high price patient categories.

9.1.3.2 Bulk purchase from increased number of patients via ICT

ICT permits the creation of wider patient and provider groups, expanding opportunities for group discounts and bulk purchasing for BoP consumers. This in turn increases access and lowers the cost of key inputs (medical supplies, airtime and bandwidth for telemedicine and phone consultations, as well as insurance) for patients whose care had traditionally been very expensive. In cases like NHH and others, bulk buying enables large numbers of BoP consumers to benefit from a low cost of care. New technologies such as the use of satellite connectivity, Wimax, Geographic Information System (GIS) mapping, online supply chain management tools and online electronic medical records management all can lower cost and make patients more easily and profitably served.

9.1.4 Enhancing quality assurance and systemic healthcare management

Poor quality of care is a frequent issue for the BoP. It can stem from a lack of skills of healthcare providers on the one hand, or from the low quality or unavailability of medicines on the other hand.

9.1.4.1 Verifying quality of care

ICT-enabled solutions can help exert some quality-assurance on BoP healthcare (expert advice, telemedicine, practitioners' training), as well as counter fake medicines.

NHH cardiology telemedicine system is based on local tracking, screening and diagnosis data collection (e.g., ECG) by local practitioners, each of them more specialized on a smaller number of specific operations than their counterparts in a mainstream cardiology setting. All local practitioners are carefully selected, trained and the quality of their interventions is monitored on an ongoing basis, for which the ICT-based system is extensively used.

With mPedigree, patients now have access to a direct quality control tool for their medicines: they can check the authenticity of drugs instantly on the spot of purchase, by sending the security code printed on the drug pack via SMS to a free number.

9.1.4.2 Improved healthcare value chain management

Because of a frequent remoteness from main infrastructures, BoP healthcare is largely hindered by multiple gaps in its logistics chain. For instance, it is questionable whether health supplies are adequately maintained till the very last mile of the value/distribution chain. ICT can provide a managerial backbone to logistics chains until then deprived of a comprehensive managerial perspective.

In Mozambique, VillageReach has used mobile Management Information Systems supported by Frontline SMS to help manage efficiently the logistics of the last-mile distribution of vaccines and medicines. They managed to efficiently reach over 251 healthcares and 5.2 million people, pushing vaccination rate for children above 95% in pilot phase 2002-2007.[113]

---

[111] As part of the World Health Oranization –recommended Directly Observed Treatment, Short Course (DOTS) strategy. For more information, see for example www.tbcindia.org.
[112] In medicine, triage is a process in which a group of patients is sorted according to their need for care.
[113] The project was entirely subsidized. For more information see www.villagereach.org

9.1.5 Macro perspective: promoting pro-BoP health policy and healthcare for the BoP as an economic sector

9.1.5.1 Improved pro-BoP Public Health strategies from crowdsourced database

The healthcare of BoP populations is still often more dependent on public action than that of more affluent populations. Unfortunately the public sector often lacks BoP-specific data to orient its health policy, a situation ICT can help palliate. For instance, mobile epidemiological surveillance system can make use of crowd data collection and large-scale public emergency information, as the management of recent emergency in the aftermath of the 2010 Haiti earthquake has shown. As mentioned by m-Heath Alliance:[114] *"Josh Nesbit, co-founder of <u>Medic Mobile</u> formerly known as Frontline SMS: Medic initiated an extensive emergency response network only two days after the earthquake. Using <u>short code technology, Mission 4636</u> was created to operate in place of a working 911 emergency service focusing on search and rescue efforts. Immediately workers and volunteers translated, located, and prioritized text messages from over 80,000 Haitians. This led to the development of additional mobile systems, including the notification of serious injuries, the need for fresh drinking water, the reporting of threats to citizens, and general requests for food. Mission 4636 is still in effect and has been an integral aspect of the rebuilding efforts in Haiti".*

9.1.5.2 Healthcare is becoming a source – not just a consumer of – resources for governments, thanks to ICT-based private sector initiatives

For years healthcare has been seen as a drag on the economies of poorer nations, given its historical status as a largely free good provided by government or charitable/religious sources. Today new technologies and approaches may be able to defeat this assumption. Private sector is increasingly managing healthcare and has been developing innovative cost-efficient solutions, often leveraging ICT. From the creation of small, locally-produced apps to help manage conditions like diabetes from a cellphone, to local health workers partnering with interconnected networks coordinated by regional centers, or new healthcare provision models such as interconnected micro-healthcare franchises, ICT-enabled healthcare is emerging as an employment opportunity and money-making proposition. Approaches such as HealthLine, mPedigree, HealthPoint Services and Changamka Microhealth[115] are just four examples of new

companies providing for-profit healthcare solutions using ICT to create scale and reach at the BoP.

9.2 Challenges

9.2.1 Measuring the impact of decentralized approaches to information (i.e. information directly accessed by end-users)

Programs like HealthLine provide essential direct care to users, enabling them to easily access reliable health information in a series of decentralized, one-on-one interactions. However, aftercare tracking remains difficult where information flow is largely one-way (i.e. from doctor/resource to patient). Additionally, as there is no measurement of the health outcomes from this service, it is hard to assess its efficiency. Finally, failing to gather data from this decentralized approach misses the opportunity to use ICT to inform policymakers on the overall health status and needs in their country (which could notably help focus interventions in case of epidemics, for example).

9.2.2 Building awareness of program initiatives

Different initiatives struggle to reach remote audiences. For example, despite the fact that mPedigree medicine authentification service is free to end-users, in its pilot phase only around 10-20% of the tagged packs generated a verification SMS, proving that the service required to be well-marketed to recruit end-users. Traditional outreach through billboards, radio, TV and "road shows" has shown efficient to some extent, but are costly. SMS and public-private partnerships may help overcome this issue to some extent; yet Project Masiluleke's millions of free SMS to build awareness on HIV/AIDS generated only 0.2% of call back to the free hotline, showing that generating interest remains a challenge. To help these initiatives truly go to scale in a sustainable way, marketing will need to build on the learnings of the private sector – especially the cell phone industry that has been successful in reaching BoP consumers not just in cities but in remote areas as well – yet remain aware of its moral imperative when dealing with as important a stake as people's health.[116] While "marketing" is important to let people know how to use the services, initiatives launching such projects should think of questions around how much and what type of marketing is appropriate for a health-related service.

---

[114] http://www.m-healthalliance.org/stories_of_impact/rebuilding-haiti-look-back-mobile-technology-efforts

[115] For Healthpoint Services description, see "Local agent" chapter p.72. Changamka Microhealth, Ltd. Is a Kenya-based healthcare and insurance company started in 2008. The initiative uses smart card technology and M-PESA m-banking to help BoP consumers save and pay for healthcare – from pregnancy to emergency care. For more information see medicalkenya.co.ke/2010/10/microcapital-brief-mchamgamka-microhealth-offeringkenyans-pre-contracted-pricing-for-clinic-visits-through-"medical-smart-card/

[116] According to the ITU, cellphone use across Africa has risen from 2% in 2000 to nearly 30% in 2010. Large marketing and sensitization programs have been a significant part of this effort. See Reuters Mobile Phone Growth Helps Poorer States available at http://www.reuters.com/article/2009/03/02/us-technology-unidUSTRE5211GJ20090302

9.2.3 Understanding the new human resources needed for remote healthcare

Training remote healthcare experts is actually a relatively new field in most countries, and clearly needs more attention. Currently most medical training is still designed to prepare doctors for "in person, come to clinic" care, for which the skills needed are not the same as for an ICT-based medical service. For example, HealthLine struggled to retain trained doctors as staff in a call center – and would possibly have benefitted from less medically qualified, more ICT-oriented staff. NHH has a different ratio of specialists and non-specialists compared to most hospitals, as ICT has allowed it to de-skill as much of the cardiac care as possible, with non-doctor actors interfacing with patients – this is one of the factor that makes its processes more efficient and less costly.

To take advantage of improving connectivity and other ICT benefits, to really go to scale while providing quality assurance and patient satisfaction, it will be necessary to increase both the number and training of remote care specialists. At the same time, to maintain the "personal touch" in care, it will also be important to develop new models working with local health workers who can augment specialist care on the other side of the ICT tool, and provide follow up. This requires notably to train health workers in IT or to create new types of training combining the two skills (ICT and health). Groups like Healthpoint Services are providing valuable lessons, looking at issues such as the kinds of training needed by local health workers, hiring people with only a few years of medical education in its health clinics.

9.2.4 Changing relationship to government in all aspects of care

In both healthcare and on the telecoms/data transmission side, there is a need for an efficient relationship with government, notably regarding the following aspects:

9.2.4.1 *Adapting regulation to support ICT-enabled healthcare delivery*

Healthcare regulations may need adaptation in order to provide for new remote care roles to a variety of non-doctors functions in care (e.g., can a non-doctor perform a remote diagnosis if he has a proper technology training?).

Similarly data confidentiality will need a new approach, for example so that services like HealthLine are able to keep patient records for better follow-up care and maybe as data for policy support, while ensuring patient anonymity.

9.2.4.2 *Supporting scale up of proven cost-efficient approaches*

In cases dealing with public health issues, government can play a key role in scaling proven approaches. This can be done as a service facilitator, in support to private initiatives: for mPedigree, a partnership with government is essential for sustainability and expansion, at least as a support in setting up awareness programs on counterfeit drugs and at best to make drug identification systems mandatory. Alternatively the government can remain the service provider, generalizing a proven approach as in Bangladesh, where the government had plans to set up a telephone health referral service of its own based on HealthLine.

Private players have shown that they could innovate and bring progress in the field of ICT4H. It is up to governments to support those with their unique assets – often trust with the local populations, and ability to scale at the national level – to help generalize cost-efficient healthcare for the BoP.

9.2.5 Adapting new technologies to the BoP

Simply put, most new devices aimed at the BoP are not rugged enough, require too much bandwidth or power, or are simply too expensive to be used full scale at the BoP. The experience of NHH – which uses satellite bandwidth provided for free from the Indian space agency ISRO – is not typical. Achieving scale for new ICT-enabled technologies in the health sector will require devices that are as light and self-contained as possible, enabling them to reach remote patients. And while new device prices continue to fall, it is increasingly clear that simply retrofitting technologies designed for the OECD will not be enough to address the needs of the BoP. New products and approaches must be designed that are specifically BoP-focused and BoP friendly, namely for the least privileged.

9.3 Promising ways forward

9.3.1 Optimizing the efficiency of existing models

To answer the challenges identified above, ICT4H players could:

- Improve back-end systems for call services, enabling capture of more data more quickly, and if legally allowed, capturing patient records. This would allow to provide follow-up care, to measure the health outcomes of the medical service, and at the macro level to inform policy through improved patient data. There may be ways to leverage coded systems and provide patient anonymity while creating distinct records (e.g. record number instead of a patient name as the access point). As part of future projects, GIS mapping and other cellphone add-ons could help policymakers increasingly leverage existing data.

- Reach out using the new tools more directly to test patient compliance and satisfaction. Quality control and patient satisfaction will lead to the most effective public health tool available – word-of-mouth. SMS or expert follow-up services and/or free callback services can help structure a service designed at checking compliance and effectiveness of care. The data-gathering experience of FMCG companies may serve as benchmarks; partnerships with such companies may also be considered.

- Work more closely with cellphone companies and other telecommunication firms to piggyback off of their marketing programs. Cell companies have been the fastest-growing firms in nearly every significant BoP market with the ability to efficiently reach nearly globally a large and growing proportion of the poorest and most remote areas. They stand to gain from the additional traffic generated by new services including in m-health and thus have strong incentives to partner. As a result, ICT4H seems a logical avenue for medical and cellphone partnership where the cell carrier helps with data transfer and basic outreach. Another way to efficiently promote the use of health services is that developed by Healthpoint Services:

offering a one-stop shop catering to several needs, where people may go for another reason than health initially – water purification and cell phone charging in the case of Healthpoint Services – making them familiar with the location and creating trust regarding the health service before they use it.

- Teach remote diagnostics/telemedicine as a new kind of doctoring and train local staff as well. Currently there are simply not enough doctors globally, and even fewer with the necessary ICT training and expertise to deliver consistent quality remote care. Working with regional medical schools, groups like NHH need to build up the cadre of remote care specialists. At the same time, both to ensure follow up and to preserve a sense of the close care giving dynamic, additional local health assistants such as the Grameen "Village Health Lady", Drishtee's health women or Healthpoint local staff – local health professionals with basic training – must be trained to help facilitate the remote doctor-patient relationship.

> " It's become clear that internet and mobile-based tools are going to transform healthcare significantly, perhaps nowhere more than in poor, rural communities of the developing world. These will take the shape of telemedical consultations, smartphone-based mobile tools that link a village health worker to an entire national healthcare system, and the ability to link records, expertise, and patient need in ways never before possible."
>
> Al Hammond, Co-Founder and Executive Chairman, Healthpoint Services and Senior Entrepreneur, Health for All Program, Ashoka

9.3.2 A new area of intervention: insurance coupled with prevention

A great majority of the ICT-enabled solutions applied to the preventive care sphere are not yet market-based. Conversely private parties involved in treatment leverage ICT innovatively to create more traction from the BoP for their treatment platform, and to keep cost low (e.g., NHH telemedicine program, the largest cardiology network worldwide and arguably the most cost efficient).

In addition to lowering their costs by partnering with institutions like NHH, BoP focused private insurance schemes could leverage ICT both to provide insurance, possibly via mobile phone as in the cases of Ecolife and mi-Life for life insurance,[117] and simultaneously to provide awareness and prevention programs via SMS or other mobile tools. Doing so would both expand their reach to currently un-served customers and optimize the risk of their client portfolio (by deploying prevention programs on the insured population).

---

[117] For more details on Ecolife in Zimbabwe see www.econet.co.zw/eco/index.php?option=com_content&task=view&id=34&Itemid=52. For more details on mi-Life in Ghana see mmublog.org/blog/mi-life-mobile-microinsurance-in-ghana/

ASHOKA FULL ECONOMIC CITIZENSHIP

9.4 Conclusion: Opportunities in ICT4H

As shown by the examples in this report, there is a wide variety of business opportunities perfectly suited to the BoP that can and should improve health outcomes in a scalable way. From local or regional creation of health-oriented cellphone apps (e.g., in the management of chronic conditions) or services (such as mPedigree), to possible microfranchises around health testing, monitoring and remote diagnosis (similar to Healthpoint Services or going a step further with mobile health workers), to healthlines requiring new skills, ICT4H in the BoP is an under-tapped source of business opportunities and employment, as well as a clear potential lever to bring better health to the most remote and the poorest.

Corporations and governments can fuel these opportunities and transform them in business models. Contests, such as the "Grand Challenges"[118] and the Launch[119] program sponsored by USAID and the Gates Foundation, are already providing a platform for early stage companies to build visibility and attract capital. There seems to be room for a much broader mechanism to allow BoP-oriented health entrepreneurs to get seed funding and test small business concepts.

---

[118] *For more details on Grand Challenges in Global Health by the Bill and Melinda Gates Foundation: www.gatesfoundation.org/global-health/Pages/grand-chal-lenges-explorations.aspx*
[119] *For more details on the Launch: Health program from USAID: www.usaid.gov/press/releases/2010/pr100817.html*

10. Education

Summary

There are very few education projects with truly market-based approaches targeting the poorest – be it BoP children or adults who still need education and professional training. We found only 21 ICT4D projects specifically focused on education, less than half of which have at least some market-based component. Education was included in the business models of specific projects mostly as training and to help build the capacity of adults. However, a large number of not-for-profit projects (e.g., MoMath) and the success of BBC Janala (providing paying English lessons to several million Bangladeshis over multiple media platforms) have demonstrated that demand for general education support is emerging.

Yet without government procurement it remains to be proven that there is sufficient purchasing power at the Base of the Pyramid to pay for the development costs of ICT-based education (support) services. What is notably missing at this stage is a demonstrated commitment from governments to procure education-supporting services from private providers.

Going forward, development of platforms proposing educational services as part of a larger pool of services can allow to share the cost of infrastructure between several value-added services, while mobile phones seem to be the tool of choice to reach the most remote with quality education content – even if that content mostly remains to be created.

Today, 69 million children are out of school, and 98% of the world's illiterate people live in developing countries.[120] With one sixth of Ashoka Fellows' projects focused on education, this area is undoubtedly a hot topic for the BoP. There are many ways through which ICT can have a great impact on education, either as main learning tool or as support to courses and to teachers.

Within our database, 21 cases (or less than 8% of all cases) are specifically focused on education. Among them, 11 completely rely on grants and subsidies, 7 mix grants and payments, and only 3 are only based on payments. These figures illustrate the fact that as of today, it is very difficult to identify a mature business case for ICT-based educational projects targeting the BoP. It is also early days, as schools and pupils are only starting to get access to devices in many countries. The value proposition of ICT for education (ICT4E) is more apparent

> "BBC Janala is one of the rare projects in education where customers pay something."
>
> Dr. Nigel Scott, Gamos Director

as training for healthcare, rural development or finance focused projects where it has become part of the value proposition, as seen in some of the cases we studied.

Extrapolating from the few numbers we have, the market potential for ICT4E is significant: BoP individuals spending on education is above $40bn a year,[121] and public spending in BoP countries is slightly in excess of $1,000 billion PPP.[122] If 2% of educational services were delivered via ICT, this would represent a $20 billion market. From another angle, BBC Janala expects implicitly to generate $25 million from lessons in a single topic, English, essentially from BoP customers, in a country of 130 m inhabitants with 99% BoP population. 40 times this population (for 4 billion BoP customers) would point to a $1 billion market for language courses only, and maybe 5 times as much for all ICT-based services including public education support.

---

[120] *Back to school? The worst places in the world to be a school child in 2010, Available at: www.campaignforeducation.org/docs/reports/1goal/1Goal%20School%20 Report.pdf*

[121] *Extrapolation based on data from 3 of the largest BoP markets, namely India, Bangladesh, and Nigeria, from. The Next 4 Billion. Market Size and Business Strategy at the Base of the Pyramid, World Resources Institute and International Finance Corporation, March 2007*

[122] *Unesco 2007*

ASHOKA FULL ECONOMIC CITIZENSHIP

The role of ICT in education and its impact on the BoP

Before school			At school			After school	
Designing curriculum	**Designing content**	**Training teachers**	**Reaching students**	**Attending classes**	**Learning**	**Practicing**	**Monitoring of performance**
▪ Classes on ICT ➤ More job opportuni-ties ▪ Classes via video-conferences ➤ Develop-ment of the course portfolio	▪ Finding class content ➤ Improved curriculum ▪ Sharing class content ➤ Teachers networking	▪ Pedagogy training ➤ Better teachers ➤ Multiplying effect on students	▪ Classes via video-conference ➤ Enrollment of new students ▪ **Mobile phones based courses** ➤ Affordable courses ➤ Reaching remote areas	▪ Reporting attendance ➤ Higher attendance of teachers and pupils ➤ Better statistics on education	▪ Using ICT as learning tools ➤ More enjoyable classes ➤ Better understand-ing ▪ **Interactions with teachers through ICT** ➤ Teachers closer to students' needs ➤ Empowered students ▪ **ICT classes** ➤ More job opportuni-ties	▪ Quizzes on mobile ➤ Out-of-school practicing ➤ Higher grades ▪ **Accessing classes archives** ➤ Better understand-ing ▪ **Online forums** ➤ Student networking	▪ Reporting grades ➤ Real-time access to grades for students

Legend

Service provided by ICT ➤ Corresponding impact on the BoP   Not market based

10.1 ICT can enhance individual learning, professional training or national education programs

ICT have a strong potential to increase access to education for the poorest through multiple uses. Three main types of ICT4E projects can be observed, based on their target clients:

▪ Individual learning, targeting both BoP and non BoP customers with extra-curricular programs

▪ Professional training, targeting enterprises for employee or customer training

▪ National education support, training the teachers and providing them with tools for enhanced pedagogy and productivity and school support programs for students.

10.1.1 Individual learning with ICT

These are the services that promote direct training to the general public. So far the examples that come across are mainly language courses and IT courses, i.e. courses developing skills likely to enhance job opportunities.

One of the most publicized of such projects is BBC Janala.[123] In 2009, the BBC launched a comprehensive, multi-channel English lesson service offering notably 3-minute voice lessons for $0.02 on mobile phones. BBC Janala was designed in co-conception with target users and the service underwent intensive user testing before launch. In particular, understanding how to lower entry barriers for the low-income and low-educated users was paramount. With its edutainment business model, BBC Janala has managed to reach 3.8 million people with 6 million paying courses. In a country where 99% of the population is part of the BoP, this makes more than 3 million BoP consumers. BBC Janala aims to become a self-sustaining social enterprise within the next 6 years.

Also built as an edutainment initiative, MILLEE (Mobile and Immersive Learning for Literacy in Emerging Economies) offers immersive, enjoyable and user-centered language learning mobile games modeled after traditional games. The project started in 2004 in India with a curriculum designed to reflect English programs in public schools. It is now expanding to China and Kenya. Its success is to be linked with intense human-centered design processes that have been implemented in the early stage of the project.[124]

---

[123] See BBC Janala case study p.35. According to the 2010 GSMA report mLearning: A Platform for Educational Opportunities at the Base of the Pyramid, "subscrip-tion based Apps are seen as the most sustainable model within developing markets"
[124] For more information, see www.cs.cmu.edu/~mattkam/lab/millee.html

HYSTRA
hybrid strategies consulting

ICT training is a natural topic for players in the ICT industry, and one that has proven effective in delivering employability. MERIT (Mass Employment Through Rural IT) or Vidya in India and CDI (Center for Digital Inclusion) in Brazil are examples of such IT trainings.

MERIT was launched by the Anudip Foundation to address the lack of IT literacy in India. Through a network of training centers, MERIT offers a market-aligned skills training program, which involves employers in the design of the curricula based upon their ICT needs. Over 70% of MERIT graduates got employed in mainstream IT jobs, answering both a demand from the population and from the local employers.[125]

Vidya (meaning "knowledge" in Hindi) was launched in 1999 by Aptech Ltd, one of the two largest computer education and training companies in India. Developed with the social objective to help bridge the digital divide, Vidya offered entry-level courses in ICT for $39 per course, enough to make Vidya self-sustaining operationally, although with lower margins than other Aptech's programs. Vidya is also used as the first module to more complex (and higher margins) ICT classes, and as an entry point for students to register for additional trainings. In its first 3 years of operations, Vidya had served more than 350,000 students, 30% of which took more advanced IT classes with Aptech afterwards, both justifying the discounted cost of this initial training for the company and making a real difference for a large number of youth.[126]

CDI aims at empowering the poor through trainings in ICT offered at CDI Community Centers in Brazil, targeting the favela youth. Each Center charges a small fee for the training services. Working closely with leading grassroots organizations to build its centers, CDI has been able to develop a deep understanding of the needs of its users. And indeed, more than 58,000 people have been enrolled in CDI trainings, with good employment results afterwards. The success of CDI has encouraged the development of competitive projects arising from the government as well as from privately owned cyber-cafés, confirming the success of the IT centers model.[127]

Even if many of these initiatives have benefitted from philanthropic impulse, they demonstrate that ICT can be effective in bringing actionable skills to the BoP for better employability, and that people are ready to pay for such a service.

10.1.2 Professional training as part of non-education specific programs

These are developed as part of a project or business with aims that are not education specific. There are many examples of this within corporations in emerging countries and five of the case studies[128] in this report specifically include training for agents and/or for clients as specific parts of their value proposition, as illustrated below.

In Narayana Hrudayalaya Hospital (NHH) in Bangalore, cardiologists not only diagnose patients through video-conference, but also teach classes to Asian and African medicine students. Thanks to telemedicine rooms, video-confering equipments, Electronic Medical Records software, and through satellite networks, NHH has found a way to bring specialized medical knowledge to 16 coronary care units it has set up at Indian Health Centers, and to 53 locations in its Pan Africa network and other clinics in Asia, where similar issues of lack of health specialists are rife.[129]

The value of such services is high: according to Tinio, Director for e-Learning of the Foundation for Information Technology Education and Development (FIT-ED), *"educators and trainers are empowered since they can use the mobile technology to communicate with learners from anywhere and at any time. At the same time, educators and trainers can access learning resources from anytime and anywhere to plan and deliver their lessons"*.[130] The example of NHH confirms that using ICT for distance staff training is a powerful way of boosting the efficiency of a whole sector.

ICT programs are also used for education on agriculture, or personal finance. Through the eKutir platform for instance, farmers in Orissa (India) have access to directly applicable education in agricultural practices through expert queries (via internet or direct call conferences with the possibility of taking picture of soil or plant) on various topics such as soil testing, growth practices, or disease management. CKW and eKutir similarly provide expert advice and agro-education to their targeted audience.[131]

These programs today are only viable as part of a larger offering – NHH, CKW and eChoupal actually provide these specific expert education services for free. The challenge to make such programs a separate viable business, would be to build value propositions that can serve several of these organizations instead of recreating

---

[125] For more information, see www.stockholmchallenge.org/project/2010/anudip-foundation-mass-employmentthrough-rural-it
[126] What works: Building social capital with Aptech's Vidya – Providing an IT introduction to thousands of poor Indians, World Resources Institute, 2003
[127] For more information, see cdiglobal.org
[128] Namely Narayana Hrudayalaya Hospital, Drishtee, eKutir, CKW and FINO
[129] See NHH case study on p.103
[130] ICT in Education, Tinio, UNDP-APDIP, 2003 FIT-ED is a non-profit organization based in Philippines. As its director, Victoria L. Tinio designs and manages the national collaboration network of public and secondary schools in the Philippines called Philipinas SchoolNet. Tinio has also worked with the e-ASEAN Task Force and other regional and international organizations on ICTs in education-related activities in Cambodia, Laos, Vietnam, and Brunei. In 2003, she published a report on ICT in education with the Asia-Pacific Development Information Programme (APDIP) in association with the secretariat of the Association of Southeast Asian Nations (ASEAN), which was presented by UNDP to the participants of the World Summit on Information Society.
[131] See CKW case study p.118 and eKutir case study p.95

ASHOKA FULL ECONOMIC CITIZENSHIP

a different system in each case, as the examples above have done in developing their own offering.

10.1.3 Supporting national education programs

In national education programs, ICT offers the possibility to strengthen the relevance of teaching content as well as to engage people more deeply into the learning process.

The Nokia MoMath project is a good illustration of these two potential impacts. This 24/7 access to math training on mobile phones has been piloted in South Africa since 2008. The service focuses on active learning by delivering interactive study packages including theory, exercises, tutoring, peer-to-peer support, as well as competitions, tests and self-assessment over mobile phones, using the free MXit instant messaging applications popular among youth in South Africa.[132] Evaluations of the 24-week pilot reported that 82% of usage happened outside school hours, indicating a strong interest from the students, as exemplified by these MoMath pupils: *"This is pretty cool. I can do maths everywhere. (…) It's far much better than using a textbook. When you are using a textbook you don't know whether you got the answer correct or not. That's what I like most about Mobile Mathematics. I get the chance to see whether I got wrong or whether I'm right." "Like I get 80% and I get frustrated, and I want to improve it. So I'll stay on Mobile Maths for like an hour, just repeating it over and over until I get it right."* Pupils' mathematics competency had risen by 14% at the end of the pilot.

In Tanzania, where the government is deeply committed to bringing ICT in education in order to increase the quality of education and meet the Millenium Development Goals, several projects have been developed and have reached a significant scale such as BridgeIT and ICT Bites. Based on public-private partnerships, the Ministry of Education and Vocational Training has developed a clear strategy for bringing ICT in the education sector: *"The government role is now changing from that of a key player to that of a facilitator in the provision of education. This new role provides a more conducive environment for the private sector to increase its investment in education. Private investments in education will establish a more learning environment that will allow imparting both knowledge and technology to the youth for a more active participation in the agricultural sector and the economy as a whole".*[133] For the development of BridgeIT, the Ministry has been

> ❝ People look at education hoping that ICT will be a solution… but it will take a long time before we do find one.❞
>
> W. Vota, Inveneo Senior Director, Education expert

working with the International Youth Foundation, Nokia, Vodacom, Pearson and FAWE in order to provide teachers with mobile teaching tools in 150 schools.[134]

Another promising way to support national education via ICT is through teachers' training, considering that half of all teachers in developing countries lack proper training and continuing professional development.[135] Specialist teaching can best leverage the wisdom of experts to a remote audience, be it for teachers or other specialists, as is done by Université Numérique Francophone Mondiale (UNFM). Created in 2005, UNFM offers tele-education services to professional workers such as teachers, midwives and nurses. Each training includes 3 modules of 120 hours and offers the possibility to attend live classes that are being taught in partnering French universities. Big screens and computers are at the disposal of the students while the transmission is done through satellite networks. The governments of each of the target countries (Mali, Burundi and Burkina Faso), the French government, and other donors sponsor this initiative, while students pay a yearly $100 fee. UNFM estimates that the training costs are 40 times cheaper than what students would pay for a similar training in a university with traditional teaching methods, attesting of the value of the virtual university model.[136]

10.2 Challenges

10.2.1 Translating needs into demand

As of today, there are very few market-based educational ICT-based services. The first difficulty is to transform the existing teaching tools, not necessarily used as they were intended to, into business models, which implies both a robust delivery system and a service that is attuned to the demands of students and teachers/trainers of the BoP.

Indeed, it has been widely assumed by donors and governments, that the identified need for a better access to education was enough to justify the development of ICT-based educational projects, and to make them sustainable. This leads to difficult situations, as Tinio notes: *"Too many projects and programs start with a bang but all too soon fade out with a whimper, to be quickly forgotten. This is true for many ICT-based educational projects as well. In many instances, these projects are*

---

[132] MXit is a free instant messaging application developed by MXit Lifestyle Ltd. in South Africa that runs on multiple mobile and computing platforms. See Youtube video available at: www.youtube.com/watch?v=4qGHpEcEGo8

[133] For more information, see the website of the United Republic of Tanzania available at: www.tanzania.go.tz/educationf.html

[134] For more information, see sites.google.com/site/ictbites

[135] mLearning: A Platform for Educational Opportunities at the Base of the Pyramid, GSMA, 2010

[136] For more information, see www.unfm.org

HYSTRA
hybrid strategies consulting

initiated by third party donors – such as international aid agencies or corporations – and not enough attention is paid to establishing a mechanism by which the educational institution or community can pursue the project on its own or in partnership with other stakeholders after the initiating donor exits."[137]

This is a trap that grassroots, specific social business related programs like Drishtee have been able to avoid, though serving only a limited target population and not a national education system. The challenge now is to "co-create" educational models for a wider base, a co-creation that Stuart Hart explains is necessary for the "Next Generation of BoP Strategies".[138]

10.2.2 Building sustainable education models to redirect existing BoP education spending towards more adapted and impactful programs

It appears the BoP is willing to pay for educational services. Indeed, as incomes among poor households rise, an increasing amount of it is spent on education and telecommunications. For instance in Bangladesh, a BoP500 household (less than $500 PPP income per year) will spend $17 on education, a BoP1500 will spend $219 and a BoP3000 will spend $835.[139] On average, the BoP spends 2.7% of its money on education in Bangladesh, which represents a $2.8bn market for Bangladesh alone. The same trends can be found in Nigeria with a $1.4bn market and in India, where there is a $14bn market.[140] In India, education is the third spending priority for farmers, according to Dr. Karmakar, Managing Director of the National Bank for Agriculture and Rural Development.[141]

Thus and as demonstrated by the examples described in the first part of this chapter, the issue is not to convince people at the BoP to pay for education, but rather to convince practitioners to build programs that take this demand and willingness to pay into account. Too many donor-driven models did not correspond to true demand and have simply disappeared once grants ran out, for lack of want from their intended beneficiaries. People are willing to pay for education, but are often not served with adequate services.

10.2.3 Linking with government policies on education

Businesses have gained confidence that ICT is a clear impact multiplier for training programs, as demonstrated by the numerous investments in such initiatives in developing countries. In public education, governments have not yet acquired the conviction that they had found the right formats bringing efficiency increases that would justify the initial investment. They are therefore still leveraging on philanthropic experimentation for most of their ICT-based education programs. Additionally, governments may not have the financial resources needed to implement national scale ICT initiatives in education.

The choices they make still have a significant impact on the development of ICT-based initiatives in this sector. Governments have the power to direct private sector investment toward ICT for education. MoMath for example was started following the South African government's request to Nokia to give a proof of concept of how mobile phones could be harnessed for learning mathematics at schools. Such ICT-based education projects, that are not directly linked with employability, do need policy support to get started and scale.

Not only MoMath but also BridgeIT and ICT Bites in Tanzania, and UNFM in several African countries are examples of how governments can successfully incorporate ICT in their education policies with some involvement of the private sector. None would have been possible without government support. Among these, Tanzania is the only African country to date where a clear strategic plan has been communicated about the use of ICT in education.

10.3 Promising ways forward

10.3.1 Piggybacking on existing structures to offer ICT4E viably

Finding a sustainable business model for ICT-based education-focused projects has proved challenging. Most projects are fully funded through grants and donations, while only some – including those illustrated in this section – through a mix of grants and payments. Though stand-alone education programs targeting the BoP may find it hard to achieve financial viability, there is a high potential in the development of platforms proposing educational services as part of a larger pool of services, as this allows to share the cost of infrastructure between several value-added services. Aptech Ltd for instance offers – beside Vidya – ICT courses for more advanced students at a higher price. In the case of Drishtee, education services are offered along with agricultural, e-commerce, and financial services.

---

[137] *ICT in Education, Tinio, UNDP-APDIP, 2003*

[138] *The Base of the Pyramid Protocol: Toward Next Generation BoP Strategy, Hart. Hart is the co-author of The Fortune at the Bottom of the Pyramid with Prahalad and emphasizes the importance of co-creation with the BoP to set up sustainable business models.*

[139] *See footnote 121*

[140] *See footnote 121*

[141] *After repaying previous debts and repaying their house. See ievents.iamai.in/blog/index.php/2010/08/notesfrom-kg-karmakar-md-nabard/*

ASHOKA FULL ECONOMIC CITIZENSHIP

10.3.2 Using cellphones rather than computers

Existing projects also shed an interesting light on tools that appear most adapted to educational projects. Even though most of the mobile phones owned by the BoP have small screens, they are used in several projects as tools for education. According to Jean Pouly, Director of the World Digital Solidarity Agency, *"mobiles offer a new interface better adapted than a computer for e-litteracy for example. Mobile, rather than computer, is going to be the main tool in Africa in ICT for development, including for education".*[142] Furthermore, providing target users the possibility to use education services outside of school is one of the rare areas with a visible impact, easily measurable in terms of improved grades or self-assessed results, thus possibly motivating a willingness to pay from users.[143] Despite the limitations of a mobile handset regarding end-user interface, working with mobile phones, i.e. tools that are widely used within a community, is the only way to have large direct impact on such after-school activities. This is confirmed by Matthew Kam, the initiator of MILLEE: when he started explanatory studies for MILLEE, he came up to the conclusion that there were many social and infrastructural challenges to using desktop computers to promote learning in schools, and thus decided to use mobile phones as the main platform for users to play the MILLEE games. Additionally, as smartphone penetration is expected to reach 17% only in Africa by 2014, focusing on approaches that are smartphone dependent bears the risk to miss out on the wide majority of BoP customers.[144] Thus services developed over simple mobile phones to improve out-of-school education seem to be the most obvious opportunity in market-based ICT-enabled education programs.

> " Mobile, rather than computer, is going to be the main tool in Africa in ICT for development, including for education."
>
> Jean Pouly, Director of the World Digital Solidarity Agency

10.4 Conclusion: Opportunities in ICT4E

In the context of an ongoing expansion of connectivity in developing countries and of ICT penetration, it appears to be too early to draw firm conclusions about the development of ICT-based educational services. On the one hand, no mature business model has emerged; on the other hand, there are a few very promising approaches that deserve attention.

ICT-based educational services only show adoption (and therefore impact) when they correspond to a clear demand from trainees. In schooling, this requires support from both teachers and content providers, which for the time being has not been achieved on a wide scale.

Although ICT seems the theoretical perfect tool to transform education, actual impact is still unclear and widely debated. According to an InfoDev report, *"despite thousands of impact studies, the impact of ICT use on student achievement remains difficult to measure and open to much reasonable debate".*[145] In very specialized fields such as education or health, the long-term impact of the projects is difficult to isolate from other factors and to measure.

Several questions are yet to find answers: do ICT-based educational projects reach the poorest? Do they help bridge the ICT gap or rather widen it? According to Tinio, *"the introduction of ICT in education, when done without careful deliberation, can result in the further marginalization of those who are already underserved and/or disadvantaged. Providing access to ICT is only one facet of efforts to address equity issues. Equal attention must be paid to ensuring that the technology is actually being used by the target learners and in ways that truly serve their needs".*[146]

In order to scale up, stakeholders will have to adopt one of the three following strategies for ICT-based educational projects:

1. Meet a very specific demand from the population so that people pay for the service. Such services can be vocational training for instance, or language or ICT training leading directly to improved employment opportunities. Enlarging the offer for wealthier clients can allow to create cross-subsidies that make prices affordable for the BoP.

2. Make sure that their service becomes a part of the government's wider national strategy of development of ICT-based tools in the public education system.

3. Propose educational services as part of a larger pool of services with a specific value proposition. This would allow to spread the costs of infrastructure on several value-added services, and to bring additional revenues to the service provider.

---

[142] *Jean Pouly further argues that "Mobiles and tablet will be connected in the very near future to interactive whiteboards (IWB). The association of mobiles and tablets with interactive videoprojectors offer a very low cost and adapted solution for mass education in Africa."*
[143] *Knowledge Maps: ICT in Education, InfoDev, 2005*
[144] *mLearning: A Platform for Educational Opportunities at the Base of the Pyramid, GSMA, 2010*
[145] *Knowledge Maps: ICT in Education, InfoDev, 2005*
[146] *ICT in Education, Tinio, UNDP-APDIP, 2003*

HYSTRA
hybrid strategies consulting

11. The socio-economic impact of ICT4D projects

There is converging evidence that ICT and the rise of connectivity have a positive impact on macroeconomic development. Yet at the project level, socio-economic results are rarely measured beside number of users and revenues. Anecdotal evidence suggests that ICT at the BoP can save lives and multiply incomes manyfolds – but there is no systematic impact assessment done to confirm that this is a real trend rather than a collection of exceptions. Additionally, so far there is no tool to single out the impact of ICT in the results of a project, and as the field of ICT4D is still recent, it is simply too early days to assess the long-term impact of ICT on development. Finally, in any given sector, assessing the socio-economic impact of ICT is not enough; rather the cost efficiency of ICT-enabled approaches should be compared to that of other means to reach a given socio-economic goal, to make sure that using ICT is the best way to improve the BoP's future.

11.1 Growing evidence of positive economic impact

Several studies have been conducted over the past years, all pointing to similar numbers in terms of impact of mobile phones: every 10% increase in mobile phone penetration corresponds to an approximate 1% increase in a developing economy growth rate.[147] This can be easily understood as telephony creates new markets, the most obvious being for handsets and for telecommunications, and generally improves the efficiency of doing business by allowing better flow of information. Additionally, as seen in the examples studied in this report, new markets of value-added services ride on those of communication.

The macroeconomic impact of ICT on GDP can be linked to various types of microeconomic impacts on the budget of BoP households. ICT-enabled services can:

- **Save costs, providing an existing service in a more cost-effective way.** This is the case of mobile money transfers for example, that avoid the cost of transportation to a bank (which in the case of social transfers could represent as high as 30% of the transfer amount) or risky – and costly – informal channels such as bus drivers.[148] Out of our study, examples with the largest numbers of users (above 5 million) are those that provide such financial services, be it in Asia, in Africa or Latin America: FINO has 28 million users in India, M-PESA 13 million in Kenya, and Bradesco more than 5 million customers in Brazil.[149] Another application of this is remote health consultation: HealthLine Bangladesh, providing a simple doctor consultation for less than half a dollar, advantageously replaced a long trip the doctor added to traditional consultation fees, amounting to several dollars. HealthLine and other such health hotlines in developing countries reach several million users each.[150]

- **Improve existing economic opportunities:**
  - By better linking supply and demand and improving logistics, effectively extending the reach of the existing market (in agriculture for instance, empowering farmers who can now make informed decision on where and when to sell and get better prices for their products, knowing the various options of neighboring markets).
  - By improving existing practices through expert advice (in agriculture for instance) or by creating new job prospects though adult education programs (either teaching skills that open job opportunities such as ICT or English, or training existing staff for better results like in healthcare by training doctors remotely on specific topics).

- **Create new jobs,** especially in the case of "local agent" models that employ local entrepreneurs to bring the benefits of technology to the last mile. These models typically scale to up to a few thousands local agents (in the case of Drishtee or eChoupal) to several tens of thousands of local agents for financial services (in

---

[147] For every 10% increase in mobile penetration rates, studies reported the following: 0.81% increase of economic growth on average in 120 countries; 1.2% increase in the economic growth India states (after a critical threshold of 25% penetration); 1.2% increase in Sudan GDP growth rate.
Respective sources: Information and Communications for Development 2009: Extending Reach and Increasing Impact, Christine Zhen-Wei Qiang, World Bank, 2009 ; available at www.ffem.fr/jahia/webdav/site/proparco/shared/PORTAILS/Secteur_prive_developpement/PDF/SPD4_PDF/Christine-Zhen-Wei-Qiang-WorldBank-Mobile-Telephony-A-Transformational-Tool-for-Growth-and-Development.pdf
India: The Impact of Mobile Phones. Moving the Debate Forward, Vodafone Group, 2009. Available at: http://www.vodafone.com/etc/medialib/public_policy_series.Par.56572.File.dat/public_policy_series_9.pdf
Economic Impact of Mobile Communications in Sudan, Ericsson and Zain, Deloitte, 2009. Available at: http://www.ericsson.com/res/thecompany/docs/sudan_economic_report.pdf
[148] Banking Agents Fuel Economic Growth in the Amazon Basin, CGAP, 2010. Available at: www.cgap.org/p/site/c/template.rc/1.26.13408/
[149] See "Financial services" section p.138 and corresponding case studies
[150] See HealthLine case study p.49 and A Doctor in Your Pocket: Health Hotlines in Developing Countries, GSMA Development Fund 2009, available at: www.gsmworld.com/documents/a_doctor_in_your_pocket.pdf

the case of M-PESA, Bradesco or FINO), be they employees or franchisees, with a multiplier effect as each agent typically serves up to 1,000 clients. Yet it must be noted that many of the "agents" already had a business before.[151] The ICT services are often an add-on to an existing job rather than a truly additional employment opportunity.

The corresponding savings or income increases have been reported anecdotally. The projects seen in this study in the field of agriculture, for example, mention 5% to 400% income increase for some of their clients. Some of the local agents managing the ICT kiosk of Drishtee or eChoupal have seen their income double or more, while retailers proposing Bradesco banking services in Brazil increased their sales of other products due to additional traffic in their shop. Yet we have not found any comprehensive or systematic study of the impact of ICT services on their clients.

11.2 Lack of data on the specific socio-impact of ICT

More than economic impact on which there is some information, what is crucially missing is a measure of the other impacts of ICT. From this study, the **anecdotal evidence** gathered seems to point to the following possible impacts:

▪ **Overall:** ICT can empower the BoP and give them pride of using complex technology and accessing previously unavailable information.

▪ **In financial services:** Mobile money avoids unsafe trips carrying cash for many people at the BoP. It also creates opportunities for microsavings, microcredit and microinsurance services to profitably serve remote areas and increase the financial security and opportunities of the BoP.

▪ **In agriculture:** ICT can improve farmers' knowledge on agro-practices as well as on the world economy. BoP clients of agro-news services through mobile or internet for instance started requesting international commodity news to better apprehend price fluctuations. Yet ICT can only realize its maximum impact on farmers' lifestyle and revenues if it is coupled with logistic support for sales of inputs and outputs.

▪ **In health:** ICT can increase the efficiency and lower the cost of care, allowing to include the poorest in health insurance schemes. It also helps the most remote to access quality care via remote diagnosis tools (from SMS queries to healthlines to telemedicine). Yet if an issue is detected, ICT will not replace the need for physical access to medicines or to a "real doctor" consultation and operation.

▪ **In education:** At school, ICT can improve attendance (of both teachers and students) and school results. For adults, ICT can improve employment prospects via professional training either in ICT itself or in language skills. Remote training can help bridge the gap in many areas between the developed and developing world. As this area is still very new and education takes time before showing impact on a country's population, the impact of ICT in this area is one of the most difficult to measure.

▪ In both health and agriculture, **ICT needs to be coupled with physical infrastructure** to have a full impact. And in all cases seen, **the impact of ICT alone remains hard to single out**. Additionally, as the field of ICT4D is still recent, **it is often too early to assess the long-term impact of ICT on development** – plus, **there does not seem to be clear methodologies to measure that impact**. All this points to a real need to improve our understanding of the role that ICT can play on development.

11.3 The need: Developing credible methods to assess the impact of ICT4D and testing it against other means to accelerate development

▪ As projects take a few years to design relevant services that people are ready to pay for, they do not have resources to spare on impact assessment during their first years of operations (which is where most initiatives stand today). NGOs, research agencies and donor-led initiatives have a real role to play there, helping the world understand the impact of ICT4D projects on development and the most cost-efficient ways to bring socio-economic services to the poorest.

▪ More specifically, there is a need to develop adapted impact monitoring and evaluation tools that allow to single out the impact of ICT, and then to conduct long-term studies regarding that impact, so far mostly gathered anecdotally. Maybe most importantly, in any given sector, assessing the socio-economic impact of ICT is not enough; rather the cost efficiency of ICT-enabled approaches should be compared to that of other means to reach a given socio-economic goal. Development projects should not aim at promoting a specific approach to a socio-economic issue, but at solving it in the most cost-efficient way possible, be it through ICT or other means. For this, further research will need to determine in which areas ICT is just a costly tool to achieve a result that other means can bring at lower costs, and when, on the contrary, ICT is indeed the best tool to improve the lives of the BoP.

---

[151] Most recent "VillagePhone" type initiatives, offering shared phone services in remote rural areas, similarly scale up to several thousand operators, creating jobs at least for a certain period of time until connectivity, handsets and energy availability improve.

HYSTRA
hybrid strategies consulting

12. The environmental impact of ICT4D projects

In the more than 280 projects screened for this study, the environmental issues were rarely mentioned, and in very few cases were environmental issues a part of project business plans. In most ICT projects, measuring the environmental impact is complex as it is difficult to assess and quantify the global positive and negative impacts. ICT clearly creates some benefits: lower emissions from transportation, better logistics and improved information management, all leading to a decrease in greenhouse gas (GHG) emissions. However ICT products use a great deal of energy, both in their fabrication and everyday use, and the sector creates a considerable amount of waste, some of it dangerously toxic.

12.1 Environmental (and economic) savings from using ICT

ICT adoption can lead to substantial savings in material used, thus directly impacting the environment. Many project leaders of cases studied here reported savings of paper and energy mainly from transportation. Yet it is hard to aggregate numbers across projects. Not surprisingly, most studies focus on the economic impact that these material savings represent, rather than at the environmental impact on a project by project basis. For example some microeconomic studies look at transportation and energy to give an order of magnitude of the potential savings that correspond to benefits for the environment. Ericsson, the Earth Institute and Millennium Promise, have found that respondents to their study saved an average of $5 per trip by placing phone calls instead of travelling, thus reducing their fuel consumption and GHG emissions.[152] In terms of global energy efficiency, ICT solutions could potentially lead to substantial energy savings, notably by decreasing transportation and improving electricity management. In India alone, such savings could amount to $30 bn per annum in 2030, representing about 2.5% of India 2009-2010 GDP.[153]

ICT can also favourably impact the environment by spreading information. In projects studied such as eKutir and eChoupal, who provide agro-information to farmers, there have been reports of scarcer and more appropriate use of fertilizers, improving soil conservation.

12.2 The dark side of ICT

However, these positive impacts are somewhat offset by two negative factors: the overall energy consumption of the ICT sector and the creation of e-waste. In 2008, ICT was the sector with the fastest growing emissions, representing 2% of man-made GHG emissions.[154] Of these, ICT manufacturing accounted for 25% while ICT use represented 75%.[155] For the specific sub-section of mobile handsets, on the contrary, manufacturing and logistics accounts for more than 75% of GHG over the life cycle.[156] The issue of recharging ICT devices is even more acute in developing countries as many BoP users still have unreliable access to electricity and turn to costly and highly polluting alternatives such as fuel generators. Some mobile phone users of the most remote areas have to travel to recharge their phone, potentially offsetting benefits of transportation savings from its use.

Additionally, rising sales of electronic devices such as mobile phones and personal computers have led to the emergence of significant amounts of electronic waste. The global market for e-waste was estimated at $8.5 bn in 2009.[157] The UN estimates that some 20 to 50 million tonnes of e-waste are generated worldwide each year and that in some countries this amount could be multiplied by five in the next decade.[158] Only 13% of this waste is reported to be recycled with or without adequate safety procedures.[159] Developing countries suffer the most of inadequate e-waste policy. They lack infrastructure to properly dispose and recycle the waste and therefore face serious health and environment hazards. It is estimated that about 80% of e-waste brought to U.S.

---

[152] Based on studies in 4 African countries: Ghana, Nigeria, Kenya and Tanzania
[153] Digital Energy Solutions Consortium India and CII-ITC Centre of Excellence for Sustainable Development
[154] GeSI 2008
[155] Cost Down, Environment Up, Arthur D. Little, 2009
[156] Source: Orange expertise
[157] Electronic Waste Recovery: Global Markets, BCC Research, 2010
[158] Recycling – from E-Waste to Resources, UNEP, 2010
[159] Sustainable E-waste Management, Sinha, 2010, Available at: www.toxicslink.org/art-view.php?id=134

recyclers is not recycled within its borders but exported to Asia (mostly China), but also to Western Africa in countries such as Nigeria or Ghana.[160] More than half a million computers arrive in Lagos every month but only about one in four works. The rest are sold as scrap, smashed up and burned.[161] ICT4D projects rarely pursue a life cycle assessment of ICT devices and beneficiaries are left to deal with electronic waste. Since transportation and recycling is costly, equipment is often dumped or burned creating an unsafe environment for surrounding communities.

The main concern of improper disposal is the toxicity of electronic components such as lead, mercury, arsenic, cadmium, selenium and hexavalent chromium that have a negative impact on population's health.[162] Initiatives to reduce environmental hazards are making progress. Industrials are working today on the reduction of toxic elements of their products; technology providers and development agencies are participating in setting up new recycling channels in developing country. The sponsors of this study are among the actors that have started addressing this issue: AFD, for example, has commissioned a study entitled "Toward a sustainable solidarity management for electronic waste in Africa",[163] Ericsson is one of the partners assisting the Ghana government in setting up proper recycling facilities for e-waste, while Orange has started supporting the creation of organizations and processes managing mobile handsets waste in several African countries.

12.3 The need: Taking the environment into account from the start

To limit the negative long-term effects on BoP's livelihood and health, this report urges practitioners to integrate the environment in their initiatives, to minimize their carbon footprint and future toxic effects on local populations they intended to serve. The first step is to at least take into account the environment when designing a product or service by opting for a low polluting technology and thinking about the aftermath of devices once their purpose is over. These actions not only diminish environmental impact but can also lead to substantial savings in terms of energy and waste costs.

[160] Exporting Harm, Basel Action Network, 2002
[161] The Guardian, 2008
[162] The ICT Sector and the Global Connectivity System: A sustainable development overview, Vetter Tony and Creech Heather, International Institute for Sustainable Development, 2008
[163] French title: "Vers une gestion durable et solidaire des déchets électroniques en Afrique", done by AMSN ("Agence Mondiale de Solidarité Numérique" or " World Digital Solidarity Agency")

HYSTRA
hybrid strategies consulting

13. Recommendations and conclusion

In such a young field, three areas need fostering: awareness and comfort of ITC4D employees and end-users, entrepreneurship to create new models, and, for scaling, systemic cooperation.

13.1 Summary of key findings and context for recommendations

13.1.1 Market-based ICT4D: A very dynamic field… with stronger rhetoric than reality

ICT has long been talked about as a lever that would enable developing countries – and particularly the least developed ones – to take "shortcuts" to development by using the latest generation of equipment and software, hence avoiding the decades of trial and error that developed countries have gone through. Indeed ICT has potential for a multiplying effect due to its ability to deliver information and expertise to people who do not have either physical or financial access to these resources. ICT can help remote BoP citizen consumers and entrepreneurs make significant improvements in their lives – in areas such as education, health, finance and agriculture.

However, ICT is no "silver bullet." While there is a wide variety of viable or partly viable business models, it is clear that work remains to be done to fully leverage the power of ICT4D and make solutions sustainable over the long term. More than half of the 280 projects screened (including some of the best practices studied here) were still young and/or not financially sustainable. The field of ICT4D is nascent, from the oldest proven projects using computers (such as eChoupal and Drishtee for example) dating back to the early 2000's to the new business models of today taking advantage of the recent spread of mobile phone – the prominent tool of ICT4D. Projects that have reached the "million customer landmark" remain the exception. As mobile phone development is recent and on-going, it is still too early to speak about results in a definitive manner.
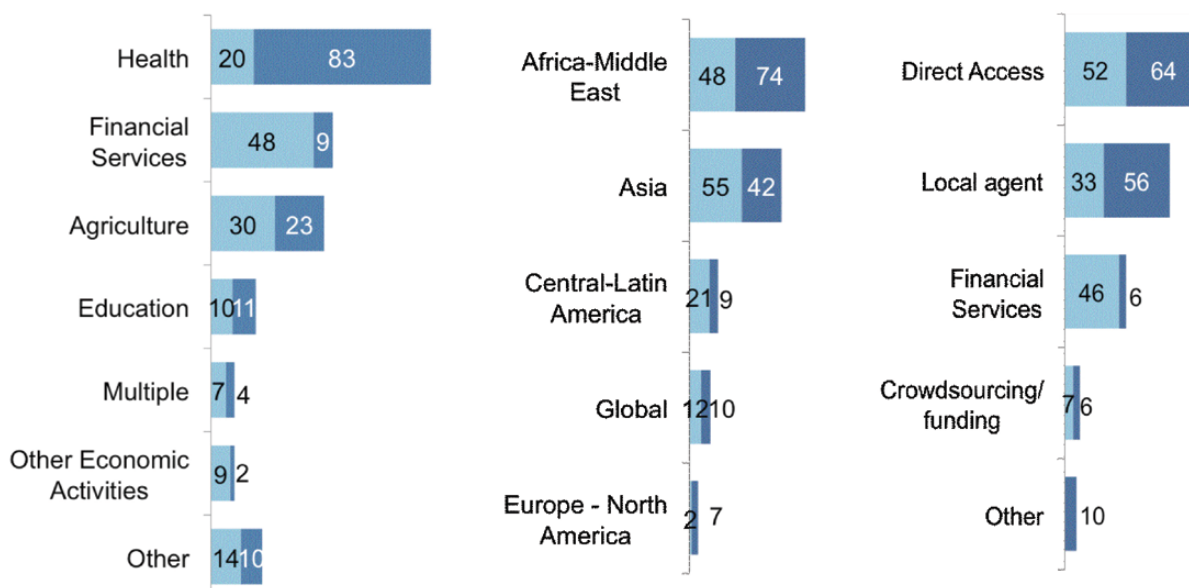
Additionally, many ICT4D projects have a short lifespan, many being donor-funded and donor-driven pilots lacking an identified, economically viable, long-term value proposition. Many ICT4D initiatives completely rely on donor funding for financing (136 initiatives studied here), while some use some measure of subsidies in their operating models (35). The remaining projects, though possibly market-based today, often have used grants in their initial phases to grow. Many projects have mistaken population need for consumer demand, providing a service that the targeted end-users or beneficiaries were not willing to pay for. The result is the creation of business models that, while well intentioned, were not sustainable. Another key challenge faced by ICT4D projects and their proponents is that the direct impact of ICT on development projects is challenging to single out and measure. By nature, even projects that would not have been possible without ICT encompass other dimensions beside the technologies themselves, and often the ICT component is not entirely devoted to social purposes. For example, Drishtee, an Indian social enterprise which has set up rural IT kiosks, uses its computers for ICT training, but also as internet spots for other purposes for villagers, and at the same time the Drishtee model encompasses non-ICT services such as the physical delivery of goods. This makes it difficult to assess results of ICT itself and take action to improve the ICT component of development projects.

13.1.2 Various levels of financial viability, with more viable cases in finance and rural development

While not always the panacea, a number of the cases studied can have a significant social and economic impact, from lower costs of money transfers to increased agro-productivity and revenues to enabling cardiac care for the poorest or educating the most remote. As shown on the graph below, the different sectors studied (finance, agriculture, health and education) have shown different levels of maturity for ICT4D business models.

"Financial services" is the most mature area in market-based ICT4D projects

Number of projects in database: ☐ Tested market-based mechanisms   ◼ Fully grant-based, "dead pilots" older than 2 years or feasibility studies

	Tested	Grant-based
Health	20	83
Financial Services	48	9
Agriculture	30	23
Education	10	11
Multiple	7	4
Other Economic Activities	9	2
Other	14	10

	Tested	Grant-based
Africa-Middle East	48	74
Asia	55	42
Central-Latin America	21	9
Global	12	10
Europe - North America	2	7

	Tested	Grant-based
Direct Access	52	64
Local agent	33	56
Financial Services	46	6
Crowdsourcing/ funding	7	6
Other		10

- In finance, momentum is building in the range of services delivered to the BOP as well as in the number of initiatives: money transfer systems are being complemented with account holding, lending, and insurance (at least 3 programs of insurance via mobile phones were launched in the past 6 months). There are now more than 80 mobile money services around the world, purely market-based. Successful projects have grown to reach more than 5 million customers each (up to 28 million in the case of FINO).

- In agriculture and rural development, a variety of fairly large-scale and mature ICT-enabled projects demonstrate economic viability and provide significant social and economic value. Such projects are directly linked to income-generating activities (for example providing better selling opportunities for agro-products), making their value easily visible for end-users. In our study, 30 projects out of 53 agro projects identified were partly market-based and still running. The largest projects have impact on several million people.

- Healthcare is an extremely dynamic sector of ICT4D, but to date most projects were grant-based. Out of the more than 100 projects in ICT4health identified for this study, only 20 were at least partly market-based and had survived the pilot phase. While donor projects were often focused on awareness campaigns or health

data gathering and analysis, market-based approaches focused on remote diagnosis (Narayana Hrudayalaya Hospital - NHH, HealthLine, Healthpoint Services) or drug authenticity verification (mPedigree). They serve up to a few million clients in the case of basic information, and several hundred thousand customers in the case of specialized remote diagnosis.

- At the other end of the spectrum, there are very few education projects with truly market-based approaches targeting the poorest. We found only 21 ICT4D projects specifically focused on education, less than half of which had at least some market-based component. Education was included in the business models of specific projects mostly as training and to help build the capacity of adults. However, some not-for-profit projects (e.g., MoMath) and the success of BBC Janala have demonstrated that demand for general education support is emerging. Yet without government procurement it remains to be proven that there is sufficient purchasing power at the Base of the Pyramid to pay for the development costs of ICT-based education (support) services. Thus what is missing at this stage is a demonstrated commitment by most governments to procure education-supporting services from private providers. In both health and education, given the high impact generated, we may be at the dawn of a period of multiplication of economically sustainable initiatives.

HYSTRA
hybrid strategies consulting

199

13.1.3 Entrepreneurship is key to starting successful services, while cross-actor and cross-sector collaboration is key to scaling

Interestingly, across sectors and business models, successful projects share common characteristics:

- They are **focused on the ability and willingness to pay of their customers**, rather than on identified social needs and supposed demand.

- They are **built from the ground-up through a trial and error approach**, flexibly evolving over time based on end-user feedback until they match demand.

- They end up **capturing a sufficiently large share of customer's mind and wallet** (through a related set of services) to recoup the initial investment and to minimize the proportion of revenue that is devoted to marketing expenses once an ICT channel is built.
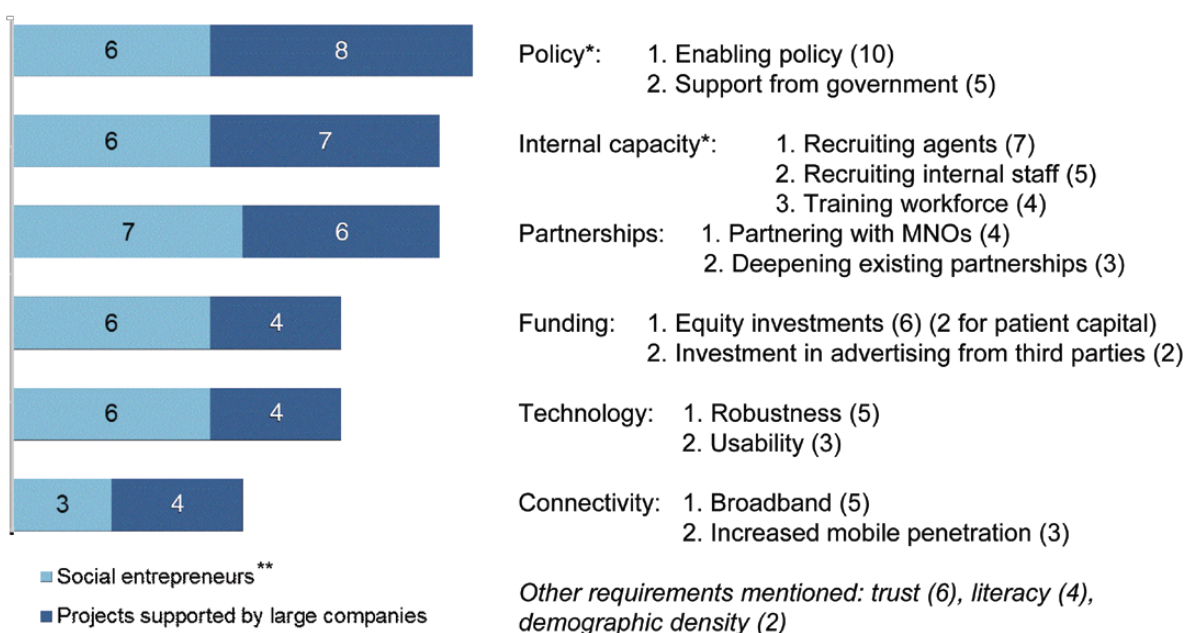
- They leverage this channel to the maximum with a **wide range of services, combining varied revenue streams**. ICT4D is a low price-high volume market, with unit price of each service in the order of magnitude of a few cents to a few dollars at best. The larger the offering of services, the easier the customer base expansion and cross-sales of complementary services becomes, thus speeding up cost recovery, and maximizing impact.

The first two characteristics describe an entrepreneurial debut, requiring time before "getting the business right" (one or two years of adjustment is the minimum) and often necessitating a corresponding high initial investment (in the order of magnitude of several million dollars) to finance these adjustments.

Notably because of the inherent conflict between these entrepreneurial characteristics (needed for initial proof of concept) and the systemic approach required to scale, a number of obstacles fall in the way of ICT4D project leaders, be they managers within large corporations or social entrepreneurs, as shown on the graph hereafter:

ICT4D leaders face similar issues to scale

Challenges mentioned by the 15 project leaders interviewed for this study

Policy*:	1. Enabling policy (10)
	2. Support from government (5)
Internal capacity*:	1. Recruiting agents (7)
	2. Recruiting internal staff (5)
	3. Training workforce (4)
Partnerships:	1. Partnering with MNOs (4)
	2. Deepening existing partnerships (3)
Funding:	1. Equity investments (6) (2 for patient capital)
	2. Investment in advertising from third parties (2)
Technology:	1. Robustness (5)
	2. Usability (3)
Connectivity:	1. Broadband (5)
	2. Increased mobile penetration (3)

- Social entrepreneurs**
- Projects supported by large companies

Other requirements mentioned: trust (6), literacy (4), demographic density (2)

Notes: Numbers in parenthesis on the right reflect the challenges mentioned most times in each category. The sum of occurrences in one category does not always match graph data as some project leaders mentioned several challenges within one category.
* The interview questions referred explicitly to internal capacity and policy challenges, whereas other challenges were mentioned spontaneously by interviewees.
** CKW, Drishtee, eKutir, Esoko, mPedigree, MYC4, NHH, and txteagle are considered as projects launched by social entrepreneurs, while the others are considered as supported by large companies.

ASHOKA **FULL ECONOMIC CITIZENSHIP**

- They need an **adequate policy framework** to develop (quoted by 14 out 15 project leaders), often requiring changes in existing regulations to allow the use of ICT in their development field, and sometimes depending on government support for success. In many cases the need for multiple approval processes (e.g. telecom regulation and healthcare regulation) for unusual offerings considerably slows down projects.

- The difficulty in this field is to combine a **very local understanding of people's habits and demand with the necessary technical expertise** and the **specific sector expertise** – this means a need either for partnerships (mentioned by 13 out of 15 project leaders) or for growing the required internal capacity (cited as a challenge by the same number of projects) both for the core team and field employees.

- **Funding** is a limitation for 10 projects. They mainly need equity investment (possibly under the form of patient capital), bu also loans for their local agents (often considered unbankable, and with loan amounts between those of MFIs and of traditional banks), investment by third parties in awareness and marketing, and donations (notably for the training of employees).

- **Technology** remains an issue (mentioned by 10 projects), in the pilot phase to design an interface with great usability, and more importantly in the scale up phase when the back-end needs to be adapted to larger numbers. Social entrepreneurs seem to suffer more from a **lack of technical expertise**, because many are field practitioners (7 out of 8 interviewed here).

- Finally, though this is not a challenge mentioned by the project leaders, our research points out that there is no "quick and dirty" way to test services locally – they all need **several months, if not years, of field testing to be suited to local needs** – which further lengthens what is usually an extensive service design and technical trial period before service is made available widely.

These issues are at the same time significant challenges and an exciting opportunity in the sense that – if addressed systematically and systemically – they could generate high social and economic returns. Market-based solutions in ICT4D **are a high risk, high return** game. In this perspective, ecosystems of ICT4D specific initiatives and stakeholders would favor the scale-up and replication of ICT-based businesses. Indeed, to scale up, an ICT4D project needs of course the "ICT" part (robust and locally appropriate technology with adequate network), the "D" part (locally relevant development content), but also an adequate political framework, supportive or at least permissive for innovative initiatives to develop. Such ecosystems not only require encompassing several actors (from the public, private and citizen sectors), but can also benefit from encompassing several areas (notably those studied here – agriculture, finance, health,

education), serving a wider share of their customers' needs and leveraging infrastructure to generate several revenue streams. For example, Drishtee or eChoupal leverage their brand and existing network initially based on ICT to provide supply chain services as well as financial services to rural areas. They work with a range of partners, from other companies such as service and product providers, to local agents in the communities that they serve; and in relationship with local governments regarding agro-trading regulations for eChoupal or government-mandated banking services in the case of Drishtee, for example.

This evidence would notably point to the establishment of regional clusters of ICT-enabled businesses in given geographies, providing a wide range of services, that could catalyze high economic and social impact in the medium and long term.

13.1.4 Going forward: rural development and other opportunities

Rural areas seem to have the most to gain from ICT4D. The key issue that their inhabitants face in terms of development is their lack of access to many services. Building a sustainable business case on health, finance, agriculture and education can be facilitated in a rural setting thanks to the immediate visible economic impact of such services – previously unavailable, and suddenly bringing a whole new set of possibilities to rural populations until then disconnected from the rest of the world.

Though rural development is indeed one of the opportunities of ICT4D socially and economically speaking, it is too early at this stage to state where the most promising venue will be. The area with the largest potential will depend on:

- The **number of potential clients** (both individual and businesses) for a given type of service – most of the world population in health; children, students and adults requiring training in education; adults in financial services; and in agriculture most people in rural areas

- The **improvement it will represent compared to previous service offerings** and the added value brought in comparison, which will determine how much people could be willing to pay

- The **level of novelty of a service** – harder to promote if it is entirely new and does not replace an existing practice as it necessitates consumer's education. Success for such initiatives is likely to take more time than for those "simply" granting easier access to existing services

And finally, as all actors of one given sector need to collaborate to successfully create efficient ecosystems of ICT services, **their willingness to participate as a whole sector in these new types of "social businesses" will**

HYSTRA
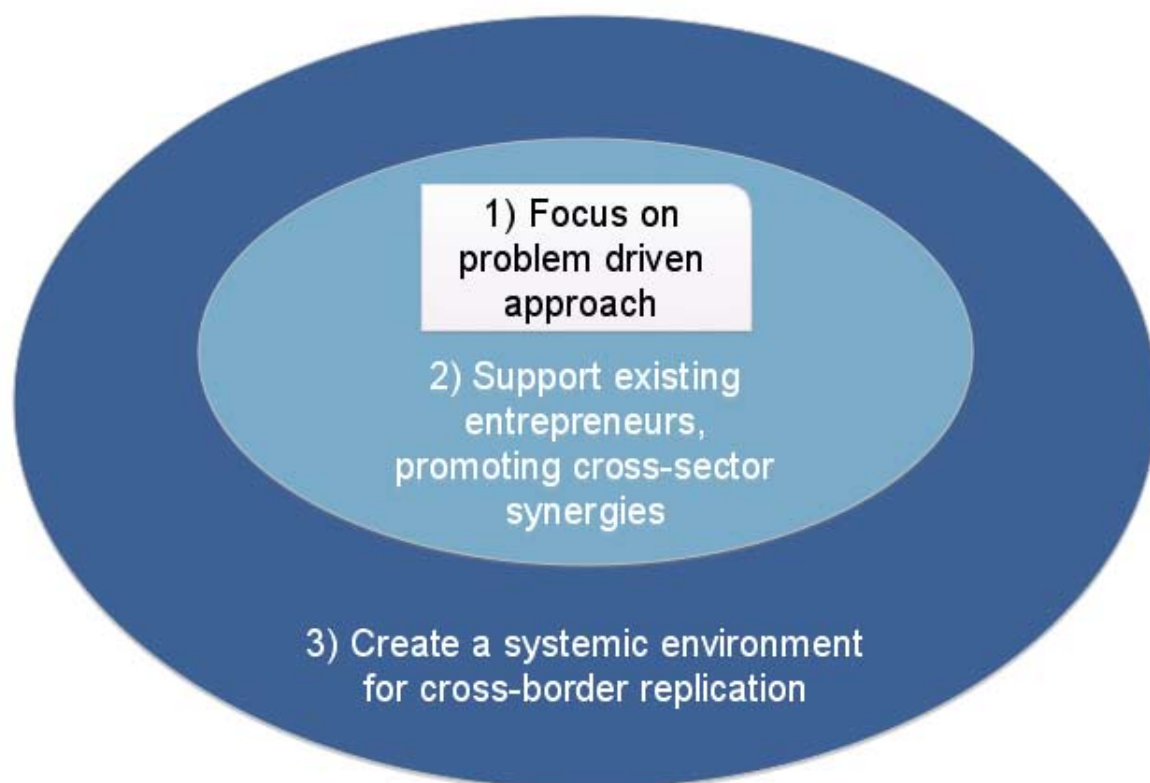hybrid strategies consulting

be key to enable a given sector to make the most of ICT. Indeed, all have a role to play. Much relies on:

- **Governments** to encourage the use of ICT;

- **Aid agencies** to inform all stakeholders and support adequate models via research and financing lines;

- **Social entrepreneurs** to develop innovative, grassroots, locally appropriate businesses with strong partners;

- **Large corporations** to invest as heavily as is required to scale up existing models and have a true impact;

- **Financial institutions** to provide the various types of capital needed to get the models right;

- **Citizen Sector Organizations** to help recruit the adequate workforce and build awareness on the ground on the benefits that ICT can bring in many fields of development; and

Research institutions and academia to help understand the case for health and education ICT business models and find how to better measure the impact of ICT (and compare its cost-efficiency to that of alternative means of development).Because of the need for ecosystems that is specific to the ICT sector, we have chosen not to present our recommendations per individual actor but rather as key areas of development for the ICT4D sector, starting from 1) promoting problem-driven approaches, to 2) scaling existing enterprises by enhancing synergies, and finally to 3) replicating successful models via a systemic approach.

These recommendations were designed to remain general and they may not apply in all contexts to all actors. The specificities needed to take further action are not part of this report. We hope all stakeholders will find the following recommendations helpful to take part in the exciting opportunity of accelerating development via ICT.

Recommendation structure

1) Focus on problem driven approach

2) Support existing entrepreneurs, promoting cross-sector synergies

3) Create a systemic environment for cross-border replication

13.2 Recommendations

13.2.1 Focus on problem-driven approaches for sustainable projects to emerge out of the myriad of existing trials

As has been seen in this study, the ICT4D sector is an extremely dynamic sector, yet very few projects are based on actual demand. A problem-driven approach incorporating a study of the demand, capacity building in ICT literacy for field practitioners, and support for entrepreneurial approaches, should allow for more ICT market-based solutions to emerge. We advise all actors willing to create or leverage an ICT-enabled service for the BoP to:

13.2.1.1 Start from the ground-up, first identifying local problems to then develop equally local solutions

Successful models solve local problems with locally useful information available on local tools. If companies, governments or Citizen Sector Organizations (CSOs) simply try and adapt an existing offering to poorer clients or beneficiaries, it is likely that the targeted users will not use it. Developing appropriate content requires field research, be it by academia, research institutes or CSOs, or by the entrepreneurs or MultiNational Corporations (MNCs) willing to set up a new venture. The areas below necessitate specific research:

- **For health and education, study both needs and demand.** Whereas the BoP already spend a significant share of their income (and the government a significant share of its spending) on low quality service, many health and education ICT services have been provided free of cost, on a trial mode; they were subsequently abandoned as soon as funding ran out, raising a fundamental question: **how can an ICT-enabled health or education service – corresponding to real demand – be built and made to offer to the poor's budget (potentially including government spending) an efficient and high quality alternative to the existing status quo?**
  - One domain where this could be particularly relevant, allowing significant savings in the healthcare system, is prevention. A theoretically ideal field for ICT, it has had little proven impact so far. How to link it to the rest of the healthcare value chain and include it in viable business models, potentially coupled with insurance schemes, remains to be put together.
  - In education, employability seems to be the key assessment criteria to evaluate teaching and training. Understanding and designing the types of services (including creating content) that would fit this need, is another area requiring innovation.

- **For financial services, study the potential of Micro Small and Medium Enterprises (MSMEs) focused m-banking services.** Several recent studies point out that MSMEs are already using m-banking significantly for their businesses, though this practice is informal.[164] The potential both to help MSMEs develop and to develop a new economically viable m-banking service dedicated to MSMEs is worth further investigation. Singling out their early adopters' role in m-banking

---

[164] See notably www.southcliff.se/docs/SME_AND_MMT_FINAL_DRAFT.pdf and scholar.mak.ac.ug/andiwalana/publications/mobile-money-use-uganda-preliminary-study
A recent study conducted by Lennart Bångens & Björn Söderberg with 110 MSEs (just micro and small, not medium sized enterprises) in Tanzania about their usage of mobile money showed that MSE's may help "diffuse" mobile money by prompting customers and suppliers to sign up - yet another reason why they may be of highvalue to MNOs as early adopters.

may provide a roadmap for further development of the m-finance industry. However, money-laundering issues remain a hurdle to significant increases in deposit and transfer thresholds.

13.2.1.2 Create the necessary ICT capacity among practitioners

▪ **Promote ICT literacy for practitioners in health and education.** Both sector and ICT expertise are necessary to succeed in the field of ICT4D, and it is easier to train a doctor in ICT than to train an IT expert to become a doctor. The lack of knowledge of these technologies is one of the factors explaining the low level of use seen in developed countries as well, where doctors, for example, have been slow to adopt the use of computers although there is evidence of cost savings and greater efficiency when compared to paper-based practices. In both health and education, training agents – such as doctors and teachers, but also nurses, managers and parents – can have a multiplying effect in the adoption of ICT by promoting its use among patients and students as well. It will also provide the ICT literacy seeds for ICT social businesses to develop.

▪ **Promote ICT literacy in the general public.** To further enable access to ICT services, the need for ICT training is not only for agents, but also for the general public –starting at school and in college to bridge the digital divide.

▪ **Promote adequate university ICT courses** (corresponding to technologies in use in each country, including mobile phones) to train local developers attuned both to local needs and latest relevant technology developments.

▪ **Promote ICT literacy at government level.** Providing appropriate information to authorities about the potential and key factors of success of ICT, is necessary to create the necessary awareness for governments both to draft adequate policies and use ICT cost-efficiently for public services.

13.2.1.3 As a large player, foster the emergence of small ICT4D ventures

▪ **As a government agency, lead the ICT4D sector by example.** In healthcare, education, and financial services, promoting usage of ICT in government and administration processes will create a market for entrepreneurs, and build trust of the population in the corresponding ICT system.

• **In financial services, propose to use remote banking for government payment and state insurance.** This will help branchless banking develop, as happened in India when the government announced that it would promote inclusion of unbanked villages, leading to the emergence of actors such as FINO; providing government payments got FINO's name known and trusted before they started providing other financial services such as money transfers. Similar government support for social money transfers via technology helped actors like Bradesco Banco Postal develop in Brazil.

• **In health, promote the use of ICT as a tool for efficiency.** Replicating NHH's business model could improve healthcare efficiency and be cost efficient for public or private health insurance schemes, hospitals and patients. Setting up phone help lines on health for remote populations such as HealthLine in Bangladesh can avoid transportation costs and lost days of wages to poor population while doing an efficient triage for public health facilities.

• **In education, incentivize the creation of new ICT-based services,** including the exploration of new models on mobile phones, as the sector is still poor in viable business models.[165]

▪ **As a large corporation or development agency, support entrepreneurs** in geographies of interest with advice and investment, and allow "intrapreneurs" within MNCs to help grow these model projects. The ICT4D sector is extremely dynamic with new enterprises developing every day, full of ideas but lacking the technical expertise, information and know-how that MNCs and development agencies have. Within MNCs, ideas from internal staff have led to some of the largest successes examined in this report.[166] To identify and support such ideas, one possibility is to create "innovation challenge" programs and prizes for new ideas and technologies to gain visibility (and raise seed funding or investment capital in the case of external entrepreneurs), and to offer to incubate the most interesting projects notably with funds and technical assistance.[167] Large corporations willing to go a step further can consider the creation of specific ICT4D business units.

---

[165] For example, in South Africa, the Vice President challenged Nokia in 2008 to give a proof of concept of how mobile phones could be leveraged to improve learning of mathematics at school. This led to the emergence of MoMath, providing math exercises on cellphone for high school students, one of the most talked about ICT4education project in 2011.

[166] RML was launched by Reuters, M-PESA by Safaricom, eChoupal by ITC Ltd, and FINO was incubated by ICICI, all following the good idea of an inspired individual or team.

[167] Vodafone and the Web Foundation have founded such a program since 2010 in Ghana called "Mobile-Empowered Entrepreneurs in Africa", which selects entrepreneurs, trains them, supports them with business development and puts them in contact with funders. See www.webfoundation.org/projects/mobile-entrepreneurs

ASHOKA FULL ECONOMIC CITIZENSHIP

13.2.1.4 Help build the case of the impact of ICT on development

Most of the projects seen here either do not measure impact, or in the best case measure the overall results of their projects without singling out the ICT component. Better understanding of the cost efficiency of the ICT component could allow for more informed investment decisions regarding the hardware and software set up in development projects, eventually leading to a more efficient use of funds and a larger impact.

Research agencies and academia in particular could research three areas to better build the case of the impact of ICT:
- Developing impact monitoring and evaluation tools for development project that allow to single out the impact of ICT,

- Conducting long-term studies regarding that impact, so far mostly gathered anecdotally, and

- Studying the cost efficiency of ICT solutions for development compared to other solutions and methods in this field.

13.2.2 Support existing entrepreneurs, promoting cross-sector synergies and removing current barriers to scale

ICT4D project leaders and entrepreneurs face issues in scaling their innovative models, often needing expertise on one of the four aspects of ICT4D market-based projects – technology, social impact, business skills or sector expertise. For this they need to build internal capacity or partnerships with external actors with the expertise they lack, as explicitly mentioned by 7 of the 8 entrepreneurs interviewed.[168] Additionally, they face significant challenges in the lack of policy support and lack of ability to find adequate financing (mentioned by three quarters of the entrepreneurs interviewed), and technology (mentioned by half). We thus suggest the following actions:

13.2.2.1 Promote or take part in cross-sector collaboration

- **As a technology company, support social entrepreneurs with their technical requirements.** Entrepreneurs and enterprises setting up ICT4D projects often need technical assistance, notably to help their selection of a system for back-end infrastructure

(database, servers). Technology companies and providers can help social entrepreneurs with their own technical expertise, possibly as a support to the global ICT4D fund described below, through early partnerships. They can for example help create cloud based application development suites that are robust enough for global spread, or more generally set up technical assistance programs to send their staff as technical support for the early stages of socially-oriented ICT projects.

- **Study and promote new forms of public-private cooperations to improve the efficiency of public service process.** Learning from existing successes in using ICT for government services, governments, entrepreneurs and large companies could work together on many government services in domains like health and financial inclusion (including m-social transfers), but also in domains outside of the scope of this study such as property rights.[169] In areas such as health and education where the public sector plays a large role, private players are likely to need the support or at least the buy-in of governments to take advantage of potential synergies with the public sector. For governments, using ICT for public services is not only a way to support new ICT4D entrants, but also a means to enhance government service at minimal costs. In some cases, it is a necessity for projects to replicate successfully in a new country.[170]

- **Deepen the understanding of the different ways to collaborate with actors across sectors.** Not only are partnerships hard to create; they are also hard to maintain successfully. 13 out of the 15 project leaders interviewed mentioned that they needed partnerships to scale, and several of them faced significant challenges in finding or implementing these partnerships. New forms of partnership may need to be crafted especially regarding shared data collection, data aggregation and data privacy issue, as well as integration of diverging objectives (notably in case of a partnership between a socially-minded partner and a more business-oriented one). Research remains to be done on what can make such partnerships work.

13.2.2.2 Assist in awareness building, training and recruitment of clients, staff, and agents

Support "local agent" initiatives by supporting the agents themselves. Knowledge of local conditions and trust from local communities are precious assets to select and train

---

[168] Among the 15 project leaders interviewed, 8 were entrepreneurs independent of large companies (as opposed to intrapreneurs within an existing large company).
[169] Bhoomi is a government project in Karnataka, India, where 20m land records where digitalized for 7m farmers of 27k villages. In 2002, after the roll-out of Bhoomi, these records were available for print in 202 village kiosks managed by government officials for 15 INR (under $0.5) per record. The system had 0.7m users per month and had provided 70m copies of land records since its launch (20m each year). Since 2003, the project has been deepened with improvements of the software, and 42 additional services offered at data centers. To date following proof of concept 800 telecenters have been set up through public private partnerships, with private companies paying for part of the investment needed to set up the 600 additional kiosks.
[170] Medicine authentification via SMS as does mPedigree is an example of an initiative that can only reach full impact if conducted in partnership with the government, to scale up to a national level.

local agents. Entities that have both (notably NGOs) can either act in partnership with companies or entrepreneurs setting up such local agent scheme, or generate revenues from such services that also expand social impact.

Support services directly accessed by end-users by raising awareness and educating users on technology literacy, as well as on the benefits of the service provided. For example, unbanked rural populations are likely to be financially illiterate. Explaining to them how an insurance policy works will encourage them to take advantage of it, while extending the reach (both revenue- and impact-wise) of branchless financial institutions.[171]

13.2.2.3 Simplify regulatory process

Setting up a supportive policy environment is primarily a role for national governments, that local agencies can emphasize through localized actions, and that could then be harmonized at a regional level (see Create a systemic environment for cross-border replication).

- **Set up a "one-stop shop" approach to facilitate the establishment of ICT-based social enterprises.** Today, such enterprises often have to get double approval of their business both from the telecommunication authorities and the health or education authorities, for example. Appointing one focal point would save time and money for these initiatives, (e.g. allowing rapid authorization to use short codes for agro or health helplines, or providing one unique representative as regulator/standards agency for each business) allowing them to develop faster.

- **Along the same lines, setting up standards can simplify the scale up of ICT ventures,** notably the harmonization of such standards of ICT use across sectors, the implementation of rules for database interconnectivity (including between several telecommunication operators and the banking sector, to allow wider spread of m-banking solutions) and the definition of norms for client record management, including patients in the health sector.[172] As in any domain, a balance has to be struck between standardization and allowance for technology evolution.

- **State visible, clear and transparent policy for ICT use,** especially in education and healthcare (sectors somewhat orphan of ICT-enabled private sector), to enable stable partnerships between actors that are not used to working together and traditionally depend on different ministries.[173] In financial services, set up regulations that leave space for locally appropriate remote banking services to develop, as different solutions will work in different places. For example, the Central Bank of Kenya allowed M-PESA to operate outside the mandates of the banking law, and the Kenyan government is currently following M-PESA's development to establish an adequately supportive regulation framework.

13.2.2.4 Create a range of adequate financing tools

Development agencies, investors, social investors and donors, as well as the traditional banking sector, can all help create financing tools to satisfy the unfulfilled needs of entrepreneurial approaches in ICT4D, especially for early project stages, consumer education and awareness programs, and local agent networks. 9 projects out of the 16 we reviewed benefitted from grants or seed capital in their early stages, and 9 mentioned that they currently needed funds to scale.[174]

- **To support take off of young ventures, provide patient capital and be ready to take risks.** ICT services require a significant upfront investment of several million dollars: 1) in the design phase to develop locally appropriate content that truly fits demand and a scalable back-end (this will require trial and error for at least a year, based on the examples of this report), and 2) in the scaling phase for marketing to build trust and consumer awareness. Given the time needed to "get the business model right", providing grants or patient capital will be a valuable support for grassroots projects to take off. However investors in that space should be aware that risks of failure are high. A fund specializing in ICT4D services can lower its risk by stimulating cross-border learning (see next page in 13.2.3.1). For the happy few successful models, the growing ubiquity of ICT will allow to scale swiftly.

---

[171] Consumer education is a particularly important pre-requisite for complex financial services such as insurance. FINO is setting up a "financial literacy university" to train people on various financial products, while eChoupal, Drishtee and FINO train their agents to in turn train customers.

[172] Zambia did it successfully via the Public Management Establishment Control (PMEC) database, which defined the information flows between the central Public Service Management Division, ministries, departments, regional and district offices, and the Ministry of Finance.

[173] In Bangladesh for example, the absence of regulation regarding mobile health allowed policy conflicts to dissolve the strategic collaboration between telecommunication operator GrameenPhone and healthcare provider TRCL regarding the HealthLine service they had initially set up together.

[174] BBC Janala, CKW, M-PESA, mPedigree, MYC4, NHH, txteagle, benefitted from early grants. eKutir and Drishtee benefitted from seed capital. FINO was incubated by ICICI, effectively subsidizing initial costs. Bradesco, eChoupal, HealthLine, RML and Esoko were financed as investments from the start, by the large corporations of which they are part for the 4 first ones, and on personal funds in the case of Esoko.

- **To deepen the reach of existing ventures in the less educated strata of the BoP, provide grants for awareness and education.** These grants will be useful to raise awareness for "to-be" customers, notably on basic financial and technology literacy, and health awareness.[175]

- **To support local agent network expansion, fund "missing middle" credit lines that will finance local agents directly.** For ICT4D entrepreneurs it makes sense to limit financing requirements through a microfranchising model, leveraging local agents that would self-finance the initial technology requirements.[176] In this case small businesses such as those of local agents are part of "the missing middle", with financing requirements around $800 to $15,000, too large for microfinance and too small for traditional banks. Creating funds for joint loans to a pool of agents directly disbursed by the central platform of the ICT4D project, or credit lines specifically dedicated to these agents with streamlined assessments to limit costs of due diligence on such small loans, could therefore contribute to removing a significant barrier to scale.[177]

13.2.3 Create a systemic environment for cross-border replication

The cases seen here highlight the need for a systemic approach to succeed – systemic both in terms of mobilizing a wide range of actors, from entrepreneurs to policymakers to CSOs to large companies and investors, and in terms of developing a wide enough range of services to be economically viable in a low-value high-volume market. As the field is also very young, most enabling frameworks have not yet had time to evolve into a favorable platform for replication. And yet the successful examples seen here call for a wider deployment, that will only be possible if the key local factors of success – in particular the favorable policy environment not only regarding ICT, but also regarding its use in a given sector – are replicated elsewhere. Thus we suggest the following:

13.2.3.1 Build a holistic platform for replication of successful social businesses

This platform would support both the advisory and financial requirements of social entrepreneurs, and would include:

- *A forum for cross-learnings:* Most entrepreneurs working on similar types of ICT4D projects have reinvented the wheel in their own way. Connecting existing successful models in one geography to entrepreneurs with similar ideas elsewhere would save them time and money, increase their chances of success and thus accelerate impact. Any international entity that has a cross-country knowledge of specific sectors has a role to play in encouraging or providing advice on the replication of best practices in new locations, and bringing sector-specific actors together in similar forums. Support for a formal or informal federation of incubators would benefit from an ICT4D intelligent overhead infrastructure. This can be done as a support to the replication fund suggested below.

- *A global (or at least regional) ICT4D fund:* The fund would optimally include equity capital for young ventures and soft money to finance cross-learnings from previous similar initiatives. As local conditions differ and ICT4D services require to be locally tailored, such a fund could partner with local funds, more aware of the local requirements for success, to bring together its global sector expertise and the local expertise of a local fund. Finally, the fund would couple its financial backing with technical assistance, possibly drawn from a pool of volunteers from technology companies.

13.2.3.2 As governments or international development agencies, work on setting up a regional platform (or take part in one if it already exists)

This can both spark cross-border innovation and allow easier replication of successful projects across borders. There is an analogy to make with mobile phones, whose recent and rapid spread was notably enabled by the creation of global industry standards, facilitating international replication, and the removal of the luxury tax on handsets, improving affordability. In ICT4D, a regional or global platform could similarly harmonize regulations across borders – allowing for a technical open platform to develop for ICT4D services – and develop regional ICT4D plans with incentives for private sector development, aiming at setting an ecosystem of businesses containing a diversity of models and sectors of intervention. A possible strategy is to support local incubators (such as Afrilabs),[178] and establish ICT training institutions for existing and to-be social entrepreneurs. The World Bank is currently pushing for such coordination of e-development initiatives through its program eTransform Africa.[179] Similarly, the EU has been stimulating an R&D oriented EU-Africa ICT cooperation with Africa.[180]

---

[175] *Example of grants used for training by mature models: FINO is setting up a "financial education academy" to train its future agents. Other mature models use grants to provide services to the very poorest: NHH subsidizes some of its operations for the poorest, notably providing telemedicine services for free, to provide cardiac care to all who need it.*

[176] *This is done for example by CKW, Drishtee, eKutir, VillagePhone initial model as well as its replications such as PT Ruma.*

[177] *Drishtee is studying the possibility to set up a revolving fund to finance its local agents.*

[178] *Afrilabs is setting up several incubators ("labs") in Africa, and has its own ICT4D fund. The labs serve as an accessible platform for bringing together technologists, investors, tech companies and hackers in the area. See afrilabs.com*

[179] *See www.infodev.org/en/Topic.33.html*

[180] *See euroafrica-ict.org*

HYSTRA
hybrid strategies consulting

13.3 Conclusion

Most of the cases we have studied are early success stories, with much yet to be written. As mobile penetration continues to increase in many markets, and as handset functionalities expand, more people will be enabled to play their potential in the global economy. Indeed, the challenge is not only to reach the tremendous impact that can be achieved by bringing the existing success stories to those remaining billions who could benefit from them. It is also to bring those who still cannot (mainly due to low literacy and low purchasing power) to a level where they could access ICT and the services it enables. This is of paramount importance to prevent the further deepening of the gap between an ICT-capable part of the world and the rest.

We are aware that many of the applications, services and business models that will take ICT4D innovations to the next level remain to be created in the coming years. Still, the ICT4D case studies seen here provide exciting insights that point to many opportunities for scale and replication. To build off of the success of current initiatives, and to invent new, more impactful business models for sustainability, stakeholders will need to partner and focus on multiplying an impact that so far still leaves most of the world out of reach of healthcare, education, financial services or agro-services.

We hope that this report, like ICT itself, will not be an end but part of the means to create more effective approaches to foster development.
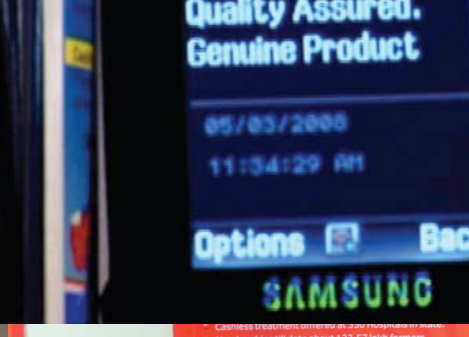
Appendix 1: Acronyms

AFD	French Development Agency
ARPU	Average Revenue per User
BDT	Bangladeshi Taka
BoP	Base of the Pyramid
BPO	Business Process Outsourcing
CAPEX	Capital Expenditure
CDI	Center for Digital Inclusion
CEO	Chief Executive Officer
CGAP	Consultative Group to Assist the Poor
CKW	Community Knowledge Workers
CSO	Citizen Sector Organization (non-governmental, non-for-profit)
CSR	Corporate Social Responsibility
ECG	Electro Cardiogram
EHP	Electronic HealthPoint
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FI	Financial Institution
FMCG	Fast Moving Consumer Goods
GDP	Growth Domestic Product
GF	Grameen Foundation
GHG	Greenhouse Gas
GIS	Geographic Information System
GSMA	Groupe Speciale Mobile Association
ICT	Information and Communication Technologies
ICT4A	Information and Communication Technologies for Agriculture
ICT4D	Information and Communication Technologies for Development
ICT4E	Information and Communication Technologies for Education
ICT4H	Information and Communication Technologies for Health
IFC	International Finance Corporation
INR	Indian Rupee
IT	Information Technologies
IVR	Interactive Voice Response
m-banking	Mobile banking
MERIT	Mass Employment Through Rural IT
MFI	Micro Finance Institution
MILLEE	Mobile and Immersive Learning for Literacy in Emerging Economies
MIS	Market Information System or Management Information System
MNC	Multi National Corporation
MNO	Mobile Network Operator
MSME	Micro Small and Medium Enterprises

ASHOKA FULL ECONOMIC CITIZENSHIP

NAFDAC	National Agency for Food and Drug Administration and Control of Nigeria
NGO	Non-Governmental Organization
NHH	Narayana Hrudayalaya Hospital
OECD	Organization for Economic Co-operation and Development
OPEX	Operational Expenditure
P2P	Peer-to-Peer or Person-to-Person
PPCO	Pocket Public Calling Office
PPP	Purchasing Power Parity
R&D	Research and Development
RML	Reuters Market Light
SEWA	Self-Employed Women Corporation
SIM	Subscriber Identity Module
SME	Small and Medium Enterprises
SMS	Short Message Service
TRCL	Telemedicine Reference Center Limited
UNDP	United Nations Development Programme
USAID	United Stated Agency for International Development
VPO	Village Phone Operator
WHO	World Health Organization

HYSTRA
hybrid strategies consulting

Appendix 2: A word about the authors

Alexandre de Carvalho

Hystra

A Network Partner at Hystra, Alexandre is an expert in healthcare and rural development with international field experience, co-leading Hystra's work on Water and ICT. He spent 23 years with Sanofi-Aventis on 4 continents, namely as Managing Director for Africa and India, where he successfully developed innovative business approaches for the BOP. He then became Global Program Director for the Clinton Foundation *HIV/AIDS Pediatric Initiative* and helped kick-start the integrated rural development program for Africa, *Clinton-Hunter Development Initiative*. He set up Sankhôfa, a consulting firm dedicated to take business leaders in developing countries to position their firms on both economic and social value creation. He is a board member of Senegalese MFI Microcred, and an alumnus of HEC Paris and the Harvard Business School.

Lucie Klarsfeld

Hystra

Lucie is a project manager at Hystra, that she joined in 2009 after graduate studies in International Affairs at Columbia University. She has since been working on hybrid strategies in the energy, housing and ICT sectors. Prior to Hystra, Lucie worked for Bain & Company in Paris and for the economic arm of the French Embassy in Bucharest. While at Columbia, she worked for two NGOs (The Cambodia Project in Phnom Penh and Sustainable South Bronx in New York), and conducted consulting assignments for the United Nations (UNDP in Mali and UNEP in Haiti). As a theater lover and actress, she led several plays and theatre initiatives, including initiating, organizing and teaching theatre classes for disadvantaged 10 year olds in a Parisian suburb. She holds an engineering degree from Ecole Centrale Paris.

François Lepicard

Hystra

François is an expert in technology and finance, co-leading Hystra' s effort to implement hybrid strategies in the energy and ICT sectors since 2009. He started his carrier at Morgan Grenfell, a leading investment bank. He then spent 11 years at McKinsey, as a partner and a co-leader of its Energy and Utilities and Corporate Finance practices, François became head of development and a member of the executive committee at Cegelec, managing an investment program and working on a new offer for energy saving buildings. He went on to co-found and manage Occam Capital, a venture capital fund investing in new technologies where he sold his general partner shares in 2008, just before joining Hystra.

Claire Pénicaud

Hystra

Claire is an expert in m-health. She joined Hystra on this project after having spent a year doing research at INSEAD Social Innovation Center. Her research focused on the scalability issues many m-health projects face. She graduated from Sciences Po Lille with a specialization in Social Innovation and is working on master degree at Ecole Centrale Paris. Her involvement in the social sector is strong and Claire has been volunteering for several NGOs in different countries (including Burkina Faso and Sweden). She became a StartingBloc fellow in 2011. After this assignment she joined GSMA as Coordinator for the programme "Mobile Money for the Unbanked".

Chloe Feinberg
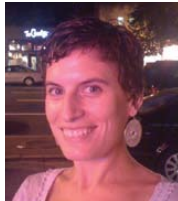
Ashoka

Chloe is an Institution Builder on Ashoka's Full Economic Citizenship (FEC) and has spent the past 2.5 years working on FEC's Health for All program. Chloe has evaluated low-cost diagnostic tools for use in resource poor areas, has been trained on the Healthpoint model, which is providing technology-enabled primary care and clean water in rural India, and will be launching the Healthpoint model in SE Asia and Latin America. Prior to joining Ashoka, Chloe worked in the Center for International Science and Technology Advancement at CUBRC, a consulting company, supporting the Department of Health and Human Services' Biotechnology Engagement Program, focused on health-related science and technology capacity building in Russia and the Commonwealth of Independent States. Chloe has an MA in International Science and Technology Policy from the George Washington University. During her studies, she focused on the links between appropriate technology and entrepreneurship for international development. Chloe is the co-founder of the Society of International Science and Technology at GWU, the founder of a financial literacy group for women in Washington DC, has evaluated microfinance programs in Azerbaijan, and has assessed user acceptance of certain mobile health applications in Kenya.

Till Jaspert

Claro Partners

Till is a strategist and hybrid thinker combining strong business understanding with creativity and user-centric thinking. He has advised senior management of major global clients in building growth strategies, new business ventures, user experiences and customer-centric organizations in numerous markets. Prior to founding Claro Partners, Till was Partner at Oliver Wyman – where he led its "Customer-centric Innovation & Design" Practice, and previously, the Telecom, Media and Technology Practice for Western Europe – and Roland Berger Strategy Consultants.

Nicolas Chevrollier

TNO

Nicolas is an expert in market-based innovation in emerging and developing economies. He is the deputy manager of the programme "Innovation for Development" and the Information and Communication Technology (ICT) for Development team leader at TNO, the Dutch Organization for Applied Scientific Research. In parallel of his duties at TNO, he is a core team member at the BoP Innovation center focusing on scaling strategies for Base of the Pyramid ventures in the food, energy and water sectors. Prior joining TNO, Nicolas had been a guest researcher at the National Institute of Standards and Technology (NIST), USA, to carry out his PhD work and an international volunteer for the "Agence Universitaire de la Francophonie" in Madagascar deploying, maintaining ICT solutions and providing courses on ICT technologies. He started his career at Cisco Systems as a pre-sale engineer. Nicolas received his PhD and engineering degree from Telecom SudParis and is an alumnus from INSEAD (Social Entrepreneurship Programme).

HYSTRA
hybrid strategies consulting

Bineke Posthumus

TNO

Bineke Posthumus has been working as a technical consultant at the Strategic Business Analysis department of TNO since 2009. She is specialised in research and advisory with regard to stakeholder analysis and complex business modelling. Bineke has a special interest in research towards market-based innovations in emerging markets. Before her career at TNO, Bineke worked as a business analyst at Deloitte Corporate Finance where she performed company valuation and business analysis assignments in the Netherlands and abroad. Bineke has a bachelor degree in International Business, majoring Finance, which she obtained with distinction (2006). After her bachelor degree she obtained a master degree in Strategic Management at the London School of Economics (2007).

Alessandra Carozza

AMG

Alessandra joined AMGlobal as an Emerging Market Associate in 2010. She studied International Relations and Biology at the College of William and Mary. Prior to AMGlobal, Alessandra worked with the Center for Legal and Social Studies in Buenos Aires and served as a Chief of Staff for the District of Columbia government. She was a fellow at the National Institute of Health and interned with the Office of the European and Eurasian at the US Department of State. Since joining AMGlobal, Alessandra has worked in the m-health, Internet governance and CSR sectors

Andrew Mack

AMG

Andrew is the Principal of AMGlobal Consulting, a specialized Washington DC-based consulting firm that helps companies do more and better business in Emerging Markets. A former World Bank Task Team Leader and finance professional with experience in more than 80 countries, he is internationally-recognized for his work on Public-Private Partnerships, Corporate Social Responsibility and economic development issues. Andrew has presented at major international meetings like the Corporate Council on Africa Biennial U.S.-Africa Business Summit, the AGOA forum, appeared on Voice of America and other press outlets in Africa and Latin America, and is the author of columns for East Africa Business Week and AllAfrica.com among others. Andrew holds a Bachelor of Arts Magna Cum Laude from Amherst College and a Masters in International Relations/International Economics from the Johns Hopkins School of Advanced International Studies. The recipient of Fellowships from Georgetown and Johns Hopkins Universities, he was twice nominated as a "Global Leader for Tomorrow" by the World Economic Forum in Davos.