TECHNOLOGY AND DEVELOPMENT

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developer: ynoval developer: ynoval
Welcome to another edition of the *ESR Review*. We have titled this issue “Technology and Development,” and we have chosen contributions that highlight the powerful role that technology has played to promote and visions of how it may yet promote economic development and self-reliance around the world.

We have chosen this topic for a number of reasons. First, the growth and penetration of computing technology is both phenomenal and impressive. For example, it took radio thirty-eight years from its introduction to get a market of 50 million users; television took thirteen years, and the Internet took only four years from its inception to hit this milestone. Evangelical stories abound emphasizing technology’s ability to help people escape poverty, such as the mom formerly on welfare now trading on eBay and the fishermen in India who use their cell phones to find the best markets/prices for their daily catch.

Second, Microsoft Corporation has just introduced its new Windows Vista operating system. On its Web site, the company claims that “the WOW starts now” and that Vista will make computer and Internet use safer, easier, and more entertaining. Will Vista and the next generation make computer use safer, easier, and more productive for many of the world’s poor? Or will the digital divide widen, making it harder for the poor to gain access to these powerful resources?

John Davies, vice president of Intel’s World Ahead project, offers a private-industry perspective of computing’s potential to lift the poor and outlines a migration path of how his company intends to make that possible. Peter Bladin of the Grameen Foundation outlines how their Village Phone program has helped improve the livelihoods of its microfranchise owners. To bring these sides together, Steve Liddle, director of the Rollins Center for eBusiness at Brigham Young University, comments on the substantial commonalities and significant differences of the two perspectives.

Patrick Crompton details how handheld computing technology has
enabled FINCA to collect, aggregate, and use data more effectively. We see in this example the two-fold power of technology to assist NGO leaders with the thorny problem of measuring program success—efficient and reliable collection, transmission, and aggregation of data for meaningful analysis.

Janine Firpo of Sevak Solutions, a nonprofit alliance between business, NGO, and academic partners, describes the development and implementation of the Remote Transaction System. The system uses a technology-based backbone to connect microcredit borrowers in Uganda with a formal banking infrastructure, increasing their ability to make timely loan payments and their access to financial products and services. Firpo presents some of the real challenges and hurdles that face any effort to replace tradition-based business processes with technology-based ones.

Dr. Steve Barley, Charles M. Pigott professor of management science and engineering at Stanford University, provides our Best Practice section. Barley is a world-class expert on the impacts of technology introduction on the surrounding social system. In our conversation, we focused on why social context influences technology adoption—for good and for ill—and how proponents of technology-based solutions can better plan and account for this context.

Assunta Forgione concludes our issue by reviewing Rodney Stark’s Victory of Reason. Stark’s thesis is that Christian theology provides the foundational building block for the rise, proliferation, and success of capitalism in the Western world, and that Roman Catholic doctrine, not Calvin’s Protestant ethic, contributed most to this development. Forgione offers a balanced review of this controversial thesis and invites you to ponder how the religious foundations of societies may promote or inhibit economic development.

As with our first issue, many thanks are in order: First, to Todd Manwaring and the staff at the Economic Self-Reliance Center for their unfailing support in handling the myriad details needed to get this issue out the door. Second, to the Rollins e-Business Center at Brigham Young University for their financial sponsorship of this issue; they made it possible to fill our pages with meaningful content instead of paid advertising. Third, to each contributor who took my somewhat vague invitation to write about “technology and development” and generated thought-provoking and meaningful articles. And finally, to you, our readers, for taking your valuable time to read, consider, and (we hope) implement what you find useful in these pages.

Paul C. Godfrey, Editor
The goal of attaining economic development in more countries around the world is unlikely to be realized while 1.7 billion working adults make less than US$2 a day and have little or no access to financial services; between 70 and 80 percent of the world’s population has no access to even the most basic financial services. How could the reach of financial services to the world’s poor be dramatically improved? What would it take to reduce transaction costs and help MFIs achieve greater business viability? What role, if any, might technology play? These were the questions that a diverse group of professionals calling themselves the Microdevelopment Finance Team (MFT) rallied to in July 2002.

This consortium of private and public sector partners pondered how to champion a breakthrough in the effectiveness, relevance, and scale of microfinance to bring financial services to a greater percentage of the world’s poor. Was it possible, they asked, to grow today’s 120 million customer base of microfinance recipients tenfold or more? Could microfinance reach the 1.7 billion working adults who live on less than US$2 a day? What would it take to build the retail capacity and IT infrastructure that could serve that many customers?

Today, nearly three years after the MFT first met, a roadmap is unfolding that gives some needed direction toward reaching this kind of world changing scale in the delivery of financial services to the rural and urban poor. Here we report on a number of pilot projects that have been undertaken around the world to investigate the role that technology can play in banking the unbanked at large scale.

DEFINING THE PROBLEM, IDENTIFYING A POTENTIAL SOLUTION

When they first started their weekly conference calls in August 2002, the members of the MFT began by analyzing the state of the microfinance industry. What, they wondered, were the obstacles keeping the industry from achieving greater scale? When the team had a working definition of the problem components, they vetted their thinking with a wider audience of industry leaders. Together the team and its partners coalesced around the following obstacles to scale:

• The absence of consistent, sector-wide operating standards and business practices that are sustainable enough to stand up to external scrutiny by potential commercial investors and partners
The RTS was designed to process loan transactions, and transfers. It is based on a combination of smart cards, point-of-sale (PoS) terminals, a transaction server, and connectors that send data directly to the MFIs’ accounting and general ledger systems. Clients are given smart cards that contain their savings and loan account balances. When ready to make a payment, the client inserts the smart card into a PoS terminal, which captures the transaction data, updates account balances on the smart card, and prints a receipt. Cash is exchanged between the client and the person responsible for the PoS terminal. Later in the day, all transactions saved on the PoS terminal are uploaded via the cellular network to the MFI’s accounting systems where the transactions are reconciled.

Three Ugandan MFIs agreed to participate in the pilot. The MFT settled on Uganda because it had one of the essential ingredients for scale—a large number of micro-entrepreneurs, a friendly legal and regulatory environment, and several providers of microfinance with long and successful track records. Uganda also posed many of the infrastructure challenges that confront any provider of technology services in the developing economies—obstacles such as frequent power outages, unreliable telecommunication services, limited technical support, and high levels of illiteracy.

**First conclusion:** Technology combined with business process change brings the greatest return.

One of the powerful lessons that emerged from the pilot projects is that overlaying a new technology solution on existing business processes, without first rethinking those procedures, can increase, rather than decrease, the cost and complexity of doing business. Information technology provides the opportunity to update and innovate business processes. Through such innovation, technology can become a lever in creating the potential for an industry to achieve dramatic increases in scale.

One of the pilot institutions used RTS to automate and alter only one portion of its data acquisition process. Clients were completely unaffected by the introduction of the RTS, and their group meetings proceeded in exactly the same way they had before. The scale of transactions captured by the RTS device was not sufficient to justify replacing manual data entry with electronic data capture.

Part way through the pilot, a second MFI realized that if it did not re-engineer its business processes then the RTS would increase, not reduce, its operating expenses and the technology would make group meetings much longer. If the institution did re-engineer some key business processes, then the RTS would provide significant value to all members of the value chain—the clients, staff, and the MFI itself. Based on this information, this institution made an attempt to proceed with process change; however, this institution decided that it did not have the internal will to shift to tracking loans on an individual basis. As a result, the institution stopped using the RTS technology and reverted to its prior practices.

The third MFI, which engineered a new business approach to leverage the RTS, demonstrated the greatest return for all constituents—customers,
agents, and the MFI. In this model, PoS terminals were given to merchants, such as gas station franchisees. These merchants thus became “agents” of the MFI. Clients that visited a local agent did not have to travel as far to make loan payments or deposit money. The client transacted and exchanged cash directly with the local agent, who acted as a virtual extension of the MFI.

One surprising result was the finding that clients are actually the greatest beneficiaries of this model. Experience and surveys consistently report that women are very likely to have their earnings taken from them by family members at the end of the day or to find that their funds are spent in unplanned ways. The ability to easily stop at a virtual bank on a frequent basis has the potential to dramatically increase the amount of savings. If the clients avail themselves of this opportunity, it would have dramatic impacts on their financial stability and on the funds that the MFI has to make additional loans.

Since the agents receive a fee for providing a transaction service, they are also beneficiaries of this model. The analysis indicates that an agent in Uganda can have an attractive side business with between four and five hundred regular clients that transact twice a month. And the MFI shows a positive return on their investment after the solution has been rolled out to more than twenty thousand clients. Analysis indicates that extending the reach of microfinance into rural areas through these virtual agents will be much less expensive than the current branch model.

SECOND CONCLUSION: Emerging markets require appropriate technologies that are designed for scale.

Emerging markets require creative technology solutions that are tailored to their unique, and often challenging, needs—erratic telephone connectivity, unreliable electricity sources, limited or nonexistent technical support, and an illiterate customer base.

One lesson that continually surfaced in the Uganda pilots was the importance of making smart decisions about distinguishing between technology solutions that were appropriate and state of the art technology solutions that were of little or limited practical use. It is far better to provide a solution that can be used rather than one that is optimized for flexibility and always-online infrastructures, the criteria often used for
mature market products. The total cost of the solution and the capabilities of the local markets must be part of any design criteria. The team members that developed the RTS thought they understood these issues as they began to develop their solution, which was designed and developed specifically for conditions in Uganda.

Since most MFIs cannot afford expensive solutions, the RTS was architected for low cost. It must be remembered that the total cost of a solution includes all the hardware to run the solution, the technical support team required to maintain the solution, and the cost of all required infrastructure elements. All of these costs were considered in the RTS design. That is why the transaction server runs on a standard PC and requires limited technical support. At the same time that the solution was designed for the Uganda context, the development team also ensured that the software adhered to technology and financial industry standards so that it could scale and eventually help MFIs share data with other financial service providers or capital markets. The RTS traded end-user flexibility for reliability, speed, and minimal training requirements, all of which are more important in the Ugandan context.

There were many surprises, however. For example, Uganda, like many countries in the developing world, is experiencing rapid growth of cellular and wireless telephone networks. When the RTS was first implemented, the developers learned that voice traffic takes priority over data traffic in Uganda. Thus they found that although the Ugandan cellular network had a large footprint over the country, it could be very unreliable. To respond to these concerns, the RTS developers engineered an offline mode for the RTS as well. This change sped up the collection of data and lowered the effective transaction costs of the calls, alterations that dramatically improved the financial sustainability of the solution. Although the final solution was an improvement in many ways, the realities that drove the change were unexpected, and they added a tremendous element of redesign.

**THIRD CONCLUSION:** The cost associated with building the infrastructure to support this enabling technology is too high for an MFI alone.

The highest capital costs of implementing the RTS solution are to be found in the PoS terminals (US$700 each) and smart cards (US$3.00 to US$5.00 each). During the Uganda pilot, blank cards were procured in India for approximately US$1.15 per card. These cards were then shipped to Uganda where they were printed locally. Printing costs ran as high as US$4.00 per card. To minimize the cost of printing, a local IT company was encouraged to provide card printing services. Through this partnership, the total card cost was reduced to less than US$3.00 per card. If the local company could print even greater quantities of cards this price would drop even more. Furthermore, if the cards could be purchased consistently in batches of ten thousand, the total price could drop below US$2.00 per card. These differences have a tremendous impact on the point at which the total solution returns a positive ROI for participating MFIs. The same dynamic exists with the PoS devices, which can cost less than US$500 each when purchased in volume.

The local IT company that started providing card printing and procurement services was also empowered to handle server management and technical support for the participating microfinance partners. If three or more MFIs utilized this application service provider (ASP) to manage the technical support and card-related aspects of their RTS deployment, a sustainable, self-perpetuating model would be established in Uganda. Each of the participating MFIs pays service fees that enable them to realize a benefit from the RTS. These fees would be a fraction of the cost that the institution would incur if it had to build these capacities internally. The ASP would then have enough business volume to not only sustain its RTS-related operations, but to grow its RTS business in Uganda and the surrounding region. However, if only one institution in Uganda participates, then the sustainability model is no longer supported until that institution has a very high volume of smart cards in circulation.

Although history and economics suggest that collaboration is critical to deploy the type of solution piloted in Uganda in a sustainable manner, cooperation is often resisted. The RTS was designed for cost reduction, and thus it was anticipated that the participating MFIs would share one
there is much room to support research and development of innovative technology solutions that encourage cooperation and collaboration.

RTS server, connect their back-end systems through one generic connector, and adapt their business process to a common PoS interface. This approach would dramatically reduce costs associated with the design, deployment, enhancement, and maintenance of the solution by more than a factor of three.

However, when this approach was discussed with the participating MFIs, they all balked. Each of the institutions wanted the RTS designed to meet their individual and unique business and MIS requirements. Because there was no proof nor sufficient time to convince them otherwise, the RTS team created three distinct RTS servers, three separate connectors, and two PoS interfaces, which significantly increased the complexity and cost of the work in Uganda. The results of the pilot now clearly demonstrate that the original objective of a standardized core solution will be a requirement if the microfinance industry is to reach scale through this type of technology innovation. Creating separate solutions for each institution is neither sustainable nor scalable.

shared infrastructure: a requirement for scale

In many ways, today’s microfinance industry seems eerily reminiscent of the early stages of the credit card market in the United States when each bank was attempting to issue its own cards, develop its own exclusive network of internal and external agents, and invest in its own technologies to serve this new market. Like those banks of yesteryear, it is not unusual to see today’s micro-finance actors resist collaboration and external agents and invest in their own technologies to serve this new market. Also, it is not unusual to see today’s microfinance actors resist collaboration or sharing of systems, even when the cost savings of doing so are likely to be significant. In the pilot projects, this was manifested in the participating institutions’ resistance to sharing RTS servers, demand for customized connectors to link to their individual MIS, desire for uniquely designed and printed smart cards, and apparent disinterest in developing a network of external agents within the Ugandan microfinance community.

There is much room to support research and development of innovative technology solutions that encourage cooperation and collaboration, rather than customization, among industry participants. Other investments worthy of donor support are shared infrastructures that decrease per unit costs for all participants, start-up capital for entrepreneurial businesses that are willing to provide technology services, and grants for those MFIs that are interested in participating in such ventures. There is also a growing need to identify and then remove those legal and regulatory roadblocks that impede the expansion of telecommunication services into rural areas, frustrate the capture of microfinance transactional information (including the credit histories of microentrepreneurs), or limit the sharing of that financial information with central switches, credit reference bureaus, and bank regulatory authorities.

About the Author

Janine Firpo is the president of Sevak Solutions, a nonprofit company that she co-founded to promote inclusive systems for the delivery of financial services to the world’s 1.7 billion urban and rural poor. Her consulting firm, SEMBA Consulting, focuses on successfully integrating information technology into emerging markets. She also serves on the board of the Jhai Foundation. Firpo holds master’s degrees in marine biology and computer science from the University of Florida and a bachelor’s degree in biology from UCLA.

Firpo led the work described in this paper while director at Hewlett-Packard. This version is adapted from Firpo’s “Banking the Unbanked: Technology’s Role in Delivering Accessible Financial Services to the Poor,” published by The Foundation for Development Cooperation. The full article can be viewed at http://www.fdc.org.au/Electronic%20Banking%20with%20the%20Poor/4%20Firpo.pdf.
MOST MICROFINANCE institutions (MFIs) pursue a double bottom line—financial performance (financial sustainability) and social performance (socioeconomic impact). However, it can be difficult to find the right balance between the two goals. Client assessment research—"the process of gathering information about clients, analyzing the information, and acting on the information"—can help a microfinance institution promote financial performance as well as measure social performance. According to measurement expert Gary Woller, there are three generic approaches to client assessment: impact assessment, market research, and client monitoring. Market research—"the process of gathering information on clients' needs and wants, behaviors and perceptions"—has the potential to strengthen financial performance if carried out properly and if the data is used effectively. Furthermore, client monitoring—"the process of tracking changes in clients' profiles, well-being, and behavior"—allows an MFI to monitor the socioeconomic status of their clients and, consequently, determine its social performance.

MOVING FORWARD WITH TECHNOLOGY

In an attempt to measure its double bottom line, FINCA, under the direction of its founder John Hatch, has been conducting client assessment research in its twenty-three country affiliates since 1997. Technology has aided FINCA in this process. Through the use of personal digital assistant (PDA) technology, FINCA has become more efficient, accurate, and cost effective in its client assessment research activities. Furthermore, FINCA is awaiting the development of its data warehouse technology, allowing the storage, analysis, and reporting of client assessment research findings more robustly and quickly.

CLIENT ASSESSMENT TOOL

Each summer, graduate research fellows, trained in FINCA's research methodology, conduct interviews with new, current, and exiting FINCA clients to monitor the socioeconomic impact of and client satisfaction with FINCA's products and services. FINCA's Client Assessment Tool (FCAT) is the survey tool used by the research fellows to conduct these interviews. The FCAT is a twenty- to thirty-minute interview that examines client demographics, their household expenditures and assets, social metric indicators such as health and education, business metrics, and customer satisfaction. Some questions found in the FCAT include the following:

- What is the highest grade/year of school you have completed?
- How much does your household usually spend per week buying food?
- Does your household own any large appliances (e.g., stove, refrigerator, washing machine)?
- Are you able to afford clean and safe drinking water?
- How would you rate FINCA's overall service to you?

RESEARCH METHODOLOGY AND BACKGROUND

Research fellows are typically deployed in three-person teams for a country visit of about five weeks. Their first couple of days in the country include briefing host-country staff on the purpose and methodology of the research, and then establishing a research sampling frame and client visitation schedule. The research fellows then begin a stage of field interviewing lasting four five-day weeks with about ten client interviews per day. Over the four weeks, each research fellow conducts approximately one hundred and fifty interviews.

During any given day, a research fellow will likely visit two village banks or credit groups in the morning to interview three or four members of each, and then visit another two groups in the afternoon to interview three or four of their members. Interviews are conducted with new clients just entering the program to serve as a proxy control group, and with current clients who have already gone through at least two years with FINCA to serve as the experimental group. Evenings and weekends are partially devoted to database quality control, with a weekly update sent to FINCA headquarters so that sample compliance can be monitored. The final week of the visit is devoted to three to four days of data analysis and report writing. The final day is set aside to present the team's findings to senior management. Every research team is required to prepare and present...
their final report to host-country staff and submit a copy to FINCA before leaving the assigned country.

**PDA TECHNOLOGY**

For many years, client interviews were recorded on paper, and the data was later entered into a database. However, starting in the summer of 2003, FINCA International began using PDAs in its research efforts. Using Pendragon Forms software, a mobile database program, the FCAT is loaded onto a PDA from which survey questions are asked and answers are recorded. After each day of interviewing, research fellows synchronize the PDAs with their laptops, and the interviews are automatically transferred to a Microsoft Access database. From there, data can be exported to Microsoft Excel or other statistical software packages for analysis.

The benefits of PDA technology for FINCA’s client assessment research activities include: (1) increased efficiency and cost-effectiveness by shortening interview times, allowing research fellows time to conduct more interviews, and (2) improved data accuracy by taking away the need to manually enter data. Research fellows, those using the technology, agree that PDAs improve the process. They’ve commented:

- “The PDAs are very portable and easy to use. They make the data capture process very quick and easy.” (2004)
- “PDAs made data collection efficient and concise. Once an interview was conducted, the data was immediately available for analysis through upload onto a computer without requiring additional investment of time on the part of the researcher.” (2005)
- “The PDAs are more effective than inputting data by hand, and they reduce the use of paper—environmentally friendly.” (2005)

Of course there are drawbacks to all technology. FINCA has found the following to be noteworthy drawbacks when using PDA technology: (1) difficulty charging the PDA in some areas of the field, (2) ensuring there is ample time to train each researcher how to use and troubleshoot the PDA and the database, and (3) system errors in the PDA and the Pendragon Forms software that occur periodically, which inevitably have to be resolved via email or international phone calls. Weaknesses of PDA technology cited by the research fellows include the following:

- “The PDAs were occasionally hard to recharge in developing countries. They are easy to lose and are one more thing to worry about. They also made interviews a little less personal.” (2004)
- “The respondents sometimes were intimidated by the technology. We had frustrating technical issues until a week before we were to finish.” (2005)

**DATA WAREHOUSING TECHNOLOGY**

Like all forms of data, it is through the proper storing, cleansing, analyzing, and reporting of data that yields meaningful and useful information. Until then, data are just words and numbers and a waste of significant time and resources. There are numerous ways this data transformation process can take place. However, different levels of analysis and reporting sophistication yield varying degrees of usefulness. Therefore, to maximize the potential power embedded within FINCA’s client assessment data, FINCA is currently engaged in the development and deployment of data warehousing technologies throughout its network.

Data warehousing is the consolidation of data from multiple sources into a single data warehouse and the use of “decision support systems”—standard queries, multidimensional analysis, modeling and segmentation, and knowledge discovery—to transform data into meaningful answers and reports that can aid in the interpretation of business events. It is the transformation of ordinary data into useful information. With both financial performance and client assessment data consolidated into one warehouse, decision makers and managers have the potential to query the data in a myriad of ways. Potential queries relevant to an MFI with a social mission could include the following:

- Does the loan portfolio of families that spend more on educating their children differ significantly from families who spend less?
- How much of the FINCA loan does the average client invest in her self-employment business?
- Among new clients recruited, how many are very poor versus moderately poor or non-poor?
- After how many loan cycles are clients most likely to leave the program, and what is their profile?
More broadly, data warehouse technology can also assist in the following analysis techniques, which otherwise are manual and labor intensive processes and, at best, guesswork:
• profitability analysis
• risk management
• customer retention and churn analysis
• target marketing
• sales analysis and forecasting
• promotions analysis

The use of these analysis techniques has the potential to revolutionize how FINCA operates and how it serves its customers. Such timely information can quickly and profoundly change the design of a microfinance program’s services, alter client targeting criteria, reduce client desertion, lower transaction costs, and enhance program sustainability.

It is even possible, through modeling and segmentation analyses, that FINCA could develop models that predict not only which products are the most effective but which are the most profitable as well.

FINCA’s breakthrough in cost-effective data collection and the use of data warehousing technology offers an opportunity to understand how microfinance helps the poor in far greater detail than ever before. Specifically, it is helping FINCA succeed as a double bottom line venture.

Endnotes

ABOUT THE AUTHOR
Patrick Crompton is president and CEO of the Alliance of Students Against Poverty (ASAP), a foundation whose mission is to educate students about extreme poverty. Before ASAP, Crompton was research manager at FINCA International. He coordinated FINCA’s client and poverty assessment initiative and social performance measurement and management system. Crompton has bachelor’s degrees in international relations and Spanish and Portuguese from the University of Minnesota.

This article is adapted from a presentation given by Crompton at the 7th Annual MicroEnterprise Conference held at Brigham Young University, Provo, Utah, 12-13 March 2004.

Disclaimer: The opinions and conclusions represented in this paper are solely those of the author and do not necessarily reflect the opinions and conclusions of FINCA International, Inc.
Improving Microfinance through Telecommunications

by Peter Bladin

Village Phone Operator Marie-Claire Ayurwandha stands on the rock foundation of the house she is building in Setwara, Rwanda, and looks at the progress. “I want to finish building this house for my children before I die,” she says with resolve.

A widow with HIV/AIDS, Marie-Claire cares for her two children and her brother’s two children, orphaned when he was killed in the 1994 genocide. After her husband died, Marie-Claire decided to start a business and took a 20,000 franc (US$40) loan from URWEGO, a microfinance institution, to open the Isimbi Restaurant. The profits from the restaurant help support the four children in her household and pay school fees.

When Marie-Claire heard about the Village Phone pilot program early in 2005, she quickly got a phone. The business turned out to be profitable enough for her to pay back her phone loan in five months, rather than the standard six months. Now, all profits from the phone are hers. She sells nearly thirty minutes each day and generates about US$12 a week. In a country where the average annual income is around US$230, the extra income from the phone has a huge impact on her life.

Marie-Claire is one of over seven thousand Village Phone Operators who are running microfranchises by providing communications services to rural villagers in Rwanda and Uganda. Observing the success of Grameen Telecom’s Village Phone program in Bangladesh—where there are over two hundred and sixty thousand Village Phone “Ladies”—the Grameen Technology Center, an initiative of Grameen Foundation, set out to replicate the Village Phone Program in other countries.

Village Phone is a powerful example of how poor rural people can sustainably benefit from information and communication technologies (ICT). Village Phone works mainly because all parties involved benefit. Village Phone Operators have strong, thriving businesses. Private businesses benefit as they provide financial services to operators, tapping a previously inaccessible market; governments meet their rural telecommunications access demands; and most importantly, individuals living in rural communities gain access to affordable telecommunications services, linking them to their friends, family, business contacts, and the world. Sustainability is ensured because everyone “wins.”

Increasing economic activity depends on information; therefore, communications and other information technologies represent an integral part of a developing economy. As the Village Phone project shows, success in using information technology as a tool of development depends on three factors: viable and locally determined business models, effective private-public partnerships, and proactive government regulation.

THE CHALLENGE OF TELECENTERS

Although Village Phone has been very successful, other ICT-based initiatives, such as rural telecenter programs, have not achieved the same level of success. While there are important innovations occurring in this field, some consider telecenters and projects involving subsidized public access to the Internet to be “rusting tractors for the 21st century.”

In theory, telecenters seem to be a good way to bring telecommunications access to the world’s poor, and proponents argue that such projects could serve as the equivalents to public libraries. However, many telecenter projects have failed because of undefined business models and lack of appropriate services. Both of these factors are keys to the success of any
Information and Communication Technologies for Development (ICT4D) project.

Simply exporting a technology that works in one environment and expecting the local economy to adapt is most often a recipe for failure. Experience has shown that technology alone cannot sustain itself. Instead, understanding the needs of the local community and involving them in the process enables an appropriate technology solution to be implemented. The makeup and development of services should be driven by the local market, beginning with the most basic services.

Combining a useful technology with a locally relevant and savvy business model has a significantly higher probability of success. Most telecenter projects in the past have been driven by a top-down model in which governments or multinationals have dictated their implementation. The traditional focus has been on the business, not the users. These projects have failed to implement a business model that was sustainable and, perhaps more importantly, built on local entrepreneurship and ownership—that is, taking a bottom-up approach in which locals not only dictate the content and services of a project but are invested in its success. Such local entrepreneurial buy-in makes it more likely that the needs of the community will be addressed and that there is at least one champion of the project who will promote it and drive it forward through the ups and downs of building a business. A strong model based on local buy-in will have a higher rate of success than a model designed to be sustained by grants.

The Village Phone model is more easily adapted to the developing world since issues such as electricity or access to the mobile network are easily solved with solar power, car batteries, and antennas. Since it relies on vocal communication, literacy is not an issue. Computers or other hardware-based devices face challenges like providing power and Internet connections and addressing issues of dust and humidity, which make it difficult to offer affordable prices. The price of computing equipment and the “pay up front” business model discourages the world’s poorest from owning and using these technologies.

One successful example of technology in a rural area is the e-Choupal program in India. e-Choupal is a corporate-based approach to village computing—one of few comparable efforts—that has been regarded as both effective and sustainable. Established by ITC Limited, a major Indian conglomerate with interests in a wide variety of areas, e-Choupal was originally created to re-engineer the procurement process for products such as soy, but has evolved into an e-commerce platform that is also a low-cost fulfillment system focused on the needs of rural India.

Such adaptability and responsiveness to local needs has been crucial to its success. According to the Digital Dividend, the e-Choupal system has also catalyzed a rural transformation that is helping to alleviate rural isolation, create more transparency for farmers, and improve their productivity and incomes. Not only does this fundamental “win-win” relationship lie at the heart of e-Choupal’s effectiveness and potential for sustainability, but such relationships lie at the heart of every successful ICT4D program.

**LEVERAGING PARTNERSHIPS**

Private-public partnerships that combine local solutions with corporate know-how can create a strong impact and scale. Internationally- and locally-based NGOs have done a good job of demonstrating how technology can be used by relying on their knowledge of the local markets, but are not always able to take their projects to scale due to either the lack of a good business model or a simple lack of funding. NGOs need to continue to demonstrate innovative uses of technology, but they will also need to partner with private corporations to take their projects to scale and help influence the regulatory environment. The NGOs’ experiences and understanding of the local markets combined with the resources and new technologies of corporations will enable projects to become sustainable businesses. By creating financially sustainable models at large scale, people and corporations will be more willing to invest in the developing world.

Telecommunications companies have been at the forefront by adopting new business models that have been developed with the world’s poor in mind. They have created a new

*Simply exporting a TECHNOLOGY that works in one ENVIRONMENT and expecting the LOCAL ECONOMY to adapt is most often a RECIPE FOR FAILURE.*
business model, the pay-as-you-go (PAYG) method of prepaid cards in very low denominations. This gives people with lower and/or less consistent incomes the ability to use phones only when they need to and can afford to. This business model shift contributed to the mobile telecommunications companies’ growth from 1 billion to 2 billion subscribers.

“By making computing AFFORDABLE, through innovative BUSINESS models, we can convert the ‘digital divide’ into a ‘DIGITAL DIVIDEND.’”

—C.K. Prahalad

Other high-tech corporations have noted the success of telecommunications companies and have adapted their business models to enter emerging markets. Microsoft, for example, recently unveiled a PAYG personal computer for developing-world consumers. Using Microsoft’s FlexGo technology, this computer is adapted to the cash flow of consumers within emerging markets. According to Microsoft, “The pay-as-you-go business model makes PCs more accessible by dramatically reducing the entry cost and enabling customers to pay for their computer as they use it, through the purchase of prepaid cards. Market trials are starting first in emerging markets where inadequate access to consumer credit, unpredictable income, and high entry costs prevent many consumers from purchasing a computer.” The consumer will own the computer after so many prepaid cards are purchased. “Microsoft’s trials in Brazil are small and significant steps in democratizing technology. The experiment demonstrates that by making computing affordable, through innovative business models, we can convert the ‘digital divide’ into a ‘digital dividend,’” said C.K. Prahalad. “There is an opportunity at the base of the pyramid, and global firms can ‘do well and do good’ by activating this new category of consumers.” Microsoft is currently expanding their PAYG model into other emerging markets.

Up until now there have only been two devices to reach economies of scale: the PC and the mobile phone. Both can be classified as disruptive technologies because they fundamentally alter the way markets operate. Technological disruptions offer an opportunity for corporations to expand into new markets and grow. Globe Telecom’s G-Cash in the Philippines, a mobile-commerce or “m-commerce” product, is an example of a disruptive technology that offers a new way to view the traditional model of cash-based commerce. Because they can use airtime minutes on their mobile phones as currency, many Filipinos are using G-Cash to circumvent traditional payment methods, which allows them to use electronic cash on their phones to purchase airtime, ring tones, and items from partnering retailers directly from their phones. It is even being used as a remittance tool.

Filipinos can also transfer G-Cash from their phones to other phones by simply “texting” a message; this allows family members in other countries to easily send money home where it can be transferred into real currency. While still in a relatively nascent stage, the potential for G-Cash and products like it is enormous. Such technologies allow people to leapfrog over traditional payment systems to systems that work for...
them. However, there are challenges to m-commerce, including security and regulatory framework.

**REGULATORY ENVIRONMENTS**

Government policy makers and regulators have an important role to play. In the mobile phone market, the regulatory environment plays a key role in combating mobile growth inhibitors, including high customs duties, handset sales taxation, service taxation, and inefficiencies in service tariffs. Progressive governments are boldly embracing new technologies to gain the long-term benefits of ICT, despite potential short-term losses in revenue. Technologies such as voice-over-Internet protocol (VoIP) can ease challenges but can also create other issues. New technologies can threaten the tax revenues of local governments. For example, the Algerian government recently approved several Internet service providers to use VoIP to legally compete on international calls, which lowered the cost of international calls by six times from the incumbent.

Government policies need to be in sync with technology. Although corporations can work to lower their end cost to the user, unless local governments understand how they too can benefit from the technologies, red tape will continue to keep costs high. Mobile phones have a bigger impact on developing economies because, more often than not, it is the first time rural communities are able to connect and help themselves. A recent study by the London Business School reports that in a typical developing country, a rise of ten mobile phones per one hundred people boosts gross domestic product (GDP) growth by 0.6 percent.

ICT in developing countries will not prosper unless countries implement more holistic development strategies that include both regulatory frameworks that allow new types of communication industries to compete with traditional telecom carriers and investment climates conducive to innovation and entrepreneurship.

It is critical that governments support partnerships between the public and private sectors and work with both to develop solutions. The private sector can help lower the costs and create efficiencies by sharing their knowledge and expertise. The local organizations provide insight and knowledge of the needs of the market. Having local ownership by utilizing the microfinance institutions removes the onus from the government while still meeting its needs.

NGOs play an important role as well. Despite their success in

**DESPITE their success in penetrating emerging markets, MOBILE TELECOMMUNICATIONS companies have not REACHED OUT to remote RURAL VILLAGES at any sort of scale.**
Village Phone and the telecom sector helped the latter reach areas it previously believed unprofitable, while also meeting the NGO’s goals to create sustainable microfranchises and increase the incomes of both the micro-entrepreneur and the customer.

THE ROAD AHEAD
It is not a question of whether or not the poor need information technology, but rather what the appropriate technology is that will enable them to escape poverty. Whatever the technology, it needs to be seen as a device with real and relevant benefits, not as an extravagance. Solutions that work in developed countries cannot simply be transplanted into developing country environments; solutions must be based on an understanding of local needs and conditions. In mobile phones, future technologies will be a combination of the technologies used in Village Phone and telecenters—a combination of the mobile phone and the computer. A new device is not necessary, but new ways to lower final costs, create more durable products that can survive in harsher environments, and incorporate a payment structure that is affordable for both local vendors and end users is the application of tomorrow. From contracts with longer terms and lower payments to schemes like PAYG or shared access, the business model will have to adapt to enable products to become more reachable.

Corporations are starting to see that there are business opportunities in the developing world, and in the words of C.K. Prahalad, “companies must revolutionize how they do business if both sides of the economic equation are to prosper.” The risks of entering this new territory are high, but the long-term rewards of growth and profits will more than balance it. The developing world is essentially looking for the same technology that exists in the developed world. They know their needs but lack the technology that will simplify their lives while their entrepreneurial spirits do the rest. New uses for these basic technologies will end up creating more businesses in the developed world.

Corporations and NGOs will both serve important roles in expanding access to technology among the poor. The NGOs are needed to explore areas that corporations would not consider profitable and to demonstrate that an application is effective and scalable in the developing world. It is also important that NGOs with experience working in certain countries ensure that any technology program they implement provides a service that is needed in the local market. Organizations, such as microfinance institutions, serve as invaluable channels to markets deep in rural areas by using their established networks and local knowledge. Thus, NGOs will serve a catalytic role, finding new innovations and forging partnerships to take those innovations to scale. It will be ICT corporations’ involvement that will ultimately drive any innovation to scale because they have the needed capital.

How will this impact Marie Claire, the Rwandan Village Phone Operator? Perhaps her clients will be paying for their meals at her restaurant via a mobile phone or perhaps she will be purchasing her supplies via the Internet terminal located in the front of her business. What is certain is that ICT can help the poor, and we are only in the beginning of this transformation. Nobel Laureate Professor Muhammad Yunus, founder of Grameen Bank, says, “If we are interested in eliminating poverty, you have the best chance ever in human history through telecommunications, through information technology, and through microcredit.”

Endnotes

ABOUT THE AUTHOR

Peter Bladin is vice president and director of the Technology Center at Grameen Foundation. He has a degree in mathematics, with minors in programming and economics from the University of Uppsala, Sweden. Bladin is active in various nonprofits in Seattle. Currently, he is chairman of the board of Npower Seattle, a nonprofit whose mission is to help other nonprofits better use technology to achieve their missions. Heading up the Technology Center is Bladin’s ideal position because it allows him to combine his interest in the appropriate use of technology with a poverty alleviation focus.
When I travel to India, China, and other growing nations, I am visibly struck by the living conditions I hear about; statistically, there is an estimated 4 billion people who live in poverty around the world. It’s visible. It’s tangible. But I am also hit, with equal impact, by the relentless and imaginative entrepreneurship I witness in these very same places by people who, from my frame of reference, have scarce resources.

Imagine, then, what these same people could achieve if they were equipped with technical tools. Technology should not be seen as a luxury. A computer with Internet access is no more a luxury to a business person than a hammer and wood are to a carpenter. Connectivity can bring the world to a classroom in Nigeria, medical consults to a small clinic in the Amazon, and agricultural market data to farmers in China. It is not an overstatement to say that technology has the power to transform and create the opportunity for betterment for individuals, students, and businesses in developing communities in every country around the world.

Economist and author C.K. Prahalad says society should not view people with little money as a burden, but rather as “resilient and creative entrepreneurs, and value-conscious consumers.” When we do this, “a whole new world of opportunity will open” for the people, governments, and businesses.

In the past three years I have visited more than seventy countries to discuss potential economic development and policy with technology and world leaders. When I meet people who work and live without the resources available to me, I think about what I can do to help; I think about what Intel can do. And I’ve come to this realization: It is more useful to determine how we can empower people—to think about what technology would best serve their particular needs—than to simply check what is in stock or available to give them.

The Intel World Ahead Program embraces the philosophy that the impact of the company’s philanthropy multiplies when combined with computer training and alliances with local government and businesses that provide a sustainable model of support and infrastructure.

Over the next five years, the Intel World Ahead Program will endeavor to bring affordable technology to the next billion people in developing communities around the world.

Intel’s goal is not only to extend affordable PC access, but also to help develop relevant content, deliver the right PCs tailored to local needs, establish connectivity, cultivate sustainable local capabilities, and provide the education needed to make a meaningful difference in people’s lives.

As I’ve traveled around the world, and as my colleagues have traveled, we have come to believe that there are four foundational components that are necessary to achieve these goals. They are: accessibility, connectivity, education, and content. These ambitious goals can only be reached by joining hands with local governments, local businesses, and NGOs—it will only work in collaboration with industry and political leaders worldwide.
Accessibility

Accessibility is more than simple access to a computer. It is also about pricing, ensuring there is relevant content online, and building PCs that stand up to local environmental conditions. Affordability can mean lowering prices, and Intel has an initiative that offers fully functional PCs at prices around 20 percent lower than typical market rates. But access means more than an affordable notebook on one’s lap. Several initiatives are under way to address these issues.

Government-assisted PC Programs

Intel is working to create opportunities for widespread PC ownership and use by increasing access to fully capable, affordable PCs tailored to regional needs, and by helping to develop the local infrastructure and support services that will sustain this access. To do this, the company is working with the governments of more than fifty countries on more than one hundred and seventy different initiatives to develop digital inclusion programs, also known as government-assisted PC programs. The goal is to make it easier for people and small to midsize businesses to purchase or lease PCs. Depending on local needs, this may be accomplished by providing incentives like tax rebates, subsidies, low-interest loans, or tariff reductions. The programs focus on people who historically have not been able to afford PCs, and those who do not have the motivation, confidence, and skills to use one.

The hope is to catalyze growth in local IT infrastructure and encourage economic development and career possibilities. The people benefit from access to information. Regional governments benefit from a more educated workforce and economic stimulation. Private businesses benefit from a broader user base that is more inclined and more able to buy technology products.

By working with governments, we can increase PC adoption, help educate children, accelerate job creation, and help people stay healthier.

Popular citizen purchasing programs include the United Kingdom’s Home Computing Initiative, launched in 1999, through which employees purchase computers tax free. In Italy, a campaign showed consumers they could buy a notebook for the price of a cappuccino a day with a government-subsidized rebate on PCs, which prompted forty thousand purchases. In Egypt, about two hundred thousand low-income families opted to pay an incremental increase on their monthly phone bill to pay for their computers over two to three years. This was possible because Intel collaborated with the Ministry of ICT in Egypt and...
financial institutions on low-risk, low-interest financing.

In 2005, 8.5 million PCs were purchased through government-assisted PC programs.

**Discover the PC Initiative**

Intel’s Discover the PC Initiative provides customized technology solutions, new types of PCs that meet the specific needs of various communities in developing countries. These include low-cost, full-featured, easy-to-use PCs for home and work, community PCs customized for public-access kiosks and low-cost PCs tailored to the needs of schools and students.

For example, the Classmate PC is designed to be practically “kid proof.” It’s a small, fully-functional notebook that comes equipped with a hard drive and wireless networking capability. With Intel processors inside, it can run world-standard, off-the-shelf applications. The blue-and-white notebook is built with flash memory so the hard drive won’t fry if dropped, and an integrated handle so it’s easy for little hands to carry.

In Nigeria, where Tope Poopola instructs the students at the Government Junior Secondary School Jabi in Abuja, the students crowd eagerly around these specially-designed PCs used during their math and science lessons. With these PCs they can access online resources like http://skoool.co.uk and http://www.learnthings.co.za, which were not previously accessible to them.

Intel engineers led the design of the small form factor notebook PC to be used in rural areas and developing communities. Teachers like Mr. Poopola can use the Classmate PC notebooks to make presentations, distribute class materials, and even give online quizzes to their students.

Inequitable computer access is not only an issue in developing countries, but also in pockets of economically depressed people in some of the richest nations around the world. For example, in Arizona, United States, a Navajo Initiative is underway to provide laptop computers with Internet access and specialized software to help an initial group of fifty at-risk farmers track agricultural assets and make investment decisions.

What I haven’t yet mentioned are all the challenges involved with establishing access to computers. There are many, and they are varied. The challenges, like determining what a specific group of people want and need from their computers, can only be discovered through in-depth research, often funded by large corporations. Providing ongoing technical support can only be achieved with local business models in place, and continued incentive and education can only be accomplished through government policies and solutions and NGO insights and actions.

**Today, a PC is also an entry point into a vast set of global resources and information.**

**Connectivity**

In today’s connected world, a computer without Internet access is of limited use. Yes, one can write documents, crunch numbers, or even play some games—ten years ago, that was great. Today, a PC is also an entry point into a vast set of global resources and information.

The importance of connectivity is especially real for rural users, who are geographically isolated from many of the services and resources readily available to city dwellers.

Many rural and remote residents can benefit from access to online services—services like filing government forms, communicating with financial institutions through email, or researching the latest theories on crop rotation and planting tips.

And perhaps of more immediate concern for governments and citizens who live in remote areas around the world is broadband’s capability to deliver telemedicine. Specialists can perform diagnostic consults to remote clinics through the use of webcams, and provide life-saving opinions on treatment. Connectivity lessens the many location-based disadvantages faced by people who live in remote areas by providing access to these services and resources.

Currently, less than 5 percent of the world’s population has access to broadband. Intel is working to change this. We continue to expand wireless low-cost broadband Internet access by working with industry partners to develop local infrastructure and support networks, and through the deployment of WiMAX technology.

WiMAX technology provides wireless Internet access over an almost 50-kilometer radius. You can think of it as a big brother to Wi-Fi. WiMAX can be used in locations that cannot easily be connected using physical cables. More than two hundred WiMAX trials are now in progress worldwide.

The nearly six hundred thousand inhabitants of Lao Cai, a remote
province in northern Vietnam, do not have access to a telephone. Landlines are scarce and unreliable due in part to surrounding mountains. Cellular phone service is a costly alternative. Together with the Vietnam Data Communication Company and the United States Agency for International Development, WiMAX delivers a cost-effective Internet dial tone and connection to the world for this community. Residents can use voice-over-internet-protocol (VoIP) telephony to talk with family and conduct business. The goal is to foster economic development in this growing community; as a border province to China, trade is increasingly important, and its success relies on good communication.

Intel recently partnered with the city of Parintins, Brazil, to provide online wireless access to its one hundred and fourteen thousand citizens. Parintins is located in the heart of the Amazon region and can only be reached by plane or an eighteen-hour boat ride.

The mayor of Parintins emphasizes how isolated his community is, with limited access to specialized medical care, teaching resources, and business information. He also stresses how difficult it would be to lay cable, making a wireless solution with satellites and antennas using WiMAX the most effective approach. As a result, Intel worked with the government and local businesses in Parintins to connect the city. Two schools, the Amazon University, a community center, and a healthcare facility in Parintins now have broadband wireless Internet. Where possible, Intel worked with local businesses to set up the infra-
structure and services. The government was instrumental in creating regulatory policies to support the project, which is necessary for WiMAX deployment. It was truly a public-private partnership, and it wouldn’t have worked without the cooperative efforts of both.

According to Brazil’s Ministry of Education, Parintins has more than thirty-seven thousand students in one hundred and ninety public schools, mostly rural. Of these schools, fewer than one third have power, and just one had a computer lab with Internet access. The Parintins WiMAX project changed this.

Intel expects 100 million students across the region will benefit from the Intel World Ahead Program by 2011.

EDUCATION

Education is a priority to every government around the world. Educated children grow up to be skilled workers, and a skilled workforce can stimulate economic growth, both on individual and societal levels. It’s no longer enough to be fluent in reading, writing, and arithmetic; one must also be PC literate. “Computing” is key to improving one’s own competitiveness and that of a country.

Intel and the Intel Foundation have a long history of working to improve education worldwide, and its ongoing programs prepare teachers and students for success in the global economy.

Since 1999, the Intel® Teach program has trained over 3 million teachers in thirty-five countries on how to use technology in the classroom. The goal is to train another 10 million teachers over the next five years—with the possibility of reaching another billion students.

The digital divide and the need for PC literacy is not only an issue in developing countries but also, as I mentioned earlier, in communities in some of the richest nations around the world. Vanessa Jones is a teacher in the Austin Independent School District in Texas and a senior trainer in the Intel® Teach program. Jones has trained 426 “master teachers” who have, in turn, trained forty-six hundred other teachers and influenced more than one hundred thousand students across the United States who otherwise would not have the skills to use PCs.

Several education initiatives around the world are individually tailored to meet the needs of the local people. The things they have in common are that they are sustainable and collaborative, involving people who know what the individual communities need most and how best to reach the students. Intel does not simply enter a classroom, teach a handful of children how to use a computer, and leave. Rather, we work with governments and with teachers who train other teachers, creating a ripple effect of reach and sustainability.

From science and engineering fairs to after-school and community-based
learning programs aimed at youth in underserved areas, the educational initiatives look to capture young people’s innate curiosity and enthusiasm for discovery, and show them there’s a world of possibility they can access. It’s as much about learning to use the technology and developing critical thinking and collaborative skills that will serve them well as they grow up, as it is about revealing what’s possible for them to achieve.

**CONTENT**

Intel can work with governments to effect regulatory change to establish or improve connectivity and incentive programs for affordable PCs. The company can partner with local businesses worldwide to create sustainable infrastructures, and train teachers to use technology in classrooms. We do—and it’s critical work. But if all this work is done with a remote community in China that allows a farmer to logon the Internet on an affordable, community PC only to find a page in English about corn prices in Iowa, the experience will be of limited use to him. Content is also key, and it’s not enough to simply post content online in a local language; it must be tailored to reflect local laws and customs, pertinent information, available resources, and services.

Local, relevant content encourages continued use of the technology—sustainability. It can help make the local economies competitive and successful. If you don’t have the right content in healthcare, education, or services, people will not use the technology. The technology is not the goal itself, but a means to accessing information that can be used to improve people’s lives.

In Jordan, Intel worked with government and nongovernment organizations and local businesses to create a community portal called the Jordan Beehive. The e-village portal provides information in Arabic about the rights of women in the family, what to expect during a dental treatment, contact information to get in touch with local politicians, and local job listings.

The strategy is to work with local organizations to create that relevant content to ensure people will logon again to continue to seek out useful information and services—to find what they need.

**POWER TO TRANSFORM**

Technology can drive huge social and economic benefits, but significant impacts can only be achieved through private-public partnerships that create opportunities for people to access information and communication technologies. Companies can’t do it alone, nor can governments. The Intel World Ahead Program brings together local businesses and regional governments to grow Intel’s philanthropic seed, while expanding the information and communications technology market opportunity. When you establish a sustainable engine that can fund itself, your philanthropy can go one hundred times further. It’s more than give away and donate—it’s a creative means to bring government, industry partners, and NGOs together to create opportunities for people to help themselves. It’s not only about helping to educate people and providing them with the tools for communication, but also about looking for ways that computers can be used in underserved communities around the world and increasing accessibility to those PCs designed to address local needs. It is also about the methods in which information and communications technology can be utilized to fuel economic growth and lead to new technologies. We currently have one hundred and seventy programs in sixty countries, established over the past two years, that have brought 20 million new users online—including 2.5 million new users in China and 1.2 million new users in India. This is a proven model. And because this is a proven model, we can begin to expand our reach.

In 1996, former Intel CEO Andy Grove predicted that someday there would be a billion connected computers around the world. It was a bold statement—at the time fewer than 200 million PCs were online. But now, we are nearly there. In 2007, the billionth person will logon to the internet. With the Intel World Ahead Program, we’re looking to bring a second billion people into the conversation. By making technology affordable and accessible with connectivity infrastructure, relevant content, support, and training, we witness what people can accomplish when empowered to reach their goals.

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**ABOUT THE AUTHOR**

John E. Davies is vice president of World Ahead for Intel Corporation. Davies is focused on creating demand for Intel platforms via Solutions, new usage models, and ecosystem scaling. He received his BS in chemistry and his PhD in solid state physics from Imperial College, London. Intel has awarded Davies two prestigious Individual Achievement Awards for establishing Intel in the European automotive market in 1986 and for driving Intel’s mobile computing architecture into the Japanese market in 1992.
I am often asked to speak on the subject of e-business—its ramifications for modern organizations and its impact on our students who will soon be entering the workforce. E-business is the use of information technology and electronic communication networks to exchange business information and conduct transactions in electronic, paperless form. From online retail operations to Web-enabled self-service technical support, organizations around the world are transforming in significant and far-reaching ways.

We often hear about the so-called digital divide between the technology rich and the technology poor. No doubt we can—and surely will—do better, but I agree with Davies’s assessment that technology can be the catalyst that creates opportunity for people in developing communities around the world to improve their standard of living. As Thomas Friedman argues in *The World Is Flat*, the advent of inexpensive and ubiquitous networked information technology is empowering individuals in significant new ways, even in communities that have previously been shut out. As just one example, today I can go to Overstock.com and purchase a beautifully handcrafted, king size Guatemalan patchwork quilt for the relatively low price of US$116.99 (including shipping), and a significant portion of that purchase will go directly to the artisans who created the quilt.

Overstock’s “Worldstock” line of business is an ideal match that pairs consumers with artisans in a new e-business model that benefits both parties.

I point to three underlying forces that are driving e-business: Moore’s Law, Metcalfe’s Law, and the principles of disruptive innovation. According to Moore’s Law the number of transistors on an integrated circuit will roughly double every twenty-four months and will cost half as much to produce. This holds true for many types of technology measurements: storage capacity, computing capacity, network transmission speed, and so forth. Technological capability progresses geometrically, so that now we routinely carry in our hands technology that was barely imaginable a generation ago.

I point to three underlying forces that are driving e-business: Moore’s Law, Metcalfe’s Law, and the principles of disruptive innovation.

Three underlying forces drive e-business: Moore’s Law, Metcalfe’s Law, and the principles of disruptive innovation.
Metcalfe’s Law helps explain why we converge so rapidly on IT standards: there is a “network effect” that rewards us for using a common technology standard. Because the World Wide Web operates with standardized, open technology platforms, it is easy for me to connect with artisans in Guatemala or anyone, anywhere who has access to the Web. Technological connectivity means that I can connect to other people all over the world. The device connections are just a proxy for human interaction, which is really what interests me. With Google’s world-class search service, I am connected not just to billions of Web pages across the globe, but also to hundreds of millions of creative human minds—actually, 1.09 billion as of 11 January 2007, according to www.internetworldstats.com.

The third force is the nature of disruptive innovation. As the Internet began to boom in the 1990s, Clayton M. Christensen studied relationships between generations of technologies. He observed that entrenched technology players were often displaced by newer, relatively unknown upstarts. Christensen discovered that, for a variety of reasons, incumbents could not see the approaching train wreck that consistently displaced the mature technology with a newer, less expensive one. (I highly recommend Christensen’s definitive book, The Innovator’s Solution.) It turns out that one of the best ways to foster a disruptive innovation is to focus on an under-served market; it’s not hard to compete with non-use. Sophisticated users like you and me may not be satisfied with Intel’s Classmate PC because we insist on having the technology found in a laptop costing US$1,000 to US$2,000. But over time, it is likely that some innovations created for the Classmate PC will find their way into the mainstream market where they will displace elements of our current best-in-class laptops. In the long run serving the under-served markets of the world is a win-win. Intel and others invest in the future of our most precious resource, educating and empowering human beings, while simultaneously driving innovations that could serve their currently most profitable markets.

The Web is growing up; we have left the so-called Web 1.0 era where we connected computers and published Web pages, and now we are in the Web 2.0 era where we are connecting people through new tools such as blogs, wikis, social networks, and all kinds of collaborative mechanisms. By connecting people to the global information resource, the Internet, we are giving them the tools they need to be a part of this transformation. Perhaps we do need to train 10 million new teachers to capture the imagination of the next billion children, but how much richer we all will be when children everywhere can collaborate with us in cyberspace. I have many years of formal education, and yet I learn something new from the Web every day. Maybe something I create can be of use to those billion children, but I believe it is even more likely that one of those newly empowered children will create something of great worth to me.

Moore’s Law frees us to think of what might be without being so concerned about the technological constraints—technology will catch up eventually. Metcalfe’s Law helps us see how there are inexorable forces driving us toward an increasingly global and connected community. And the principles of disruptive innovation reassure us that our philanthropic efforts are not merely altruistic, but they also help ensure our own future. The question is not whether technology can assist development, but rather how technology can be best deployed to do so.

ABOUT THE AUTHOR

Stephen W. Liddle is an associate professor of information systems and director of the eBusiness Center at Brigham Young University. He has been the Grant and David Fellow at BYU since 1999. Liddle received his bachelor’s and doctoral degrees in computer science from BYU in 1989 and 1995, respectively.
pebble in a pond

A conversation between

Stephen R. Barley

and

Paul C. Godfrey

on

21 September

2006
Paul C. Godfrey, associate academic director of BYU’s Economic Self-Reliance Center, sat down with Stephen R. Barley, the Charles M. Pigott Professor of Management Science and Engineering at Stanford University, to discuss problems and needs associated with implementing technology in developing countries. Barley is co-director of the Center for Work, Technology, and Organization at Stanford’s School of Engineering, and the co-director of the Stanford/General Motors Collaborative Research Laboratory. He has written extensively on the impact of new technologies on work, the organization of technical work, and organizational culture. Barley was a member of the Board of Senior Scholars of the National Center for the Educational Quality of the Workforce and co-chaired National Research Council and the National Academy of Science’s committee on the changing occupational structure in the United States.

Godfrey: Most people believe technology is the answer for X, whatever X may happen to be—poverty, productivity, etc. The logic goes: “If we can just get technology in the hands of people, the problem will be solved.” Why, in your experience, is that rarely, if ever, the case?

Barley: Why doesn’t technology solve problems? I guess one reason is that people tend to think of technology as a direct cause. Two falsehoods come with this vision. First, the relationship between technology and almost everything else is not direct; it’s probabilistic. Second, there are many other variables and second-order effects that influence what will happen after a technology is adopted. Those second-order effects are almost always linked to the context in which the technology is placed. And no one thinks about context!
There are cases where people have not thought through the real usefulness of technology. I remember a story about toilets in an African country. A company had donated a bunch of toilets—chemical ones, I think—but the donors had not really thought through the process by which these toilets were going to get cleaned. So, they provided toilets that, on the face of it, would solve a sanitation problem. But the sanitation problem actually got worse because no one wanted to clean or service the toilets. People used them en masse, but didn’t clean them. The toilets became breeding grounds for dangerous bacteria and disease. Donors assumed that people in this society—with their rudimentary notion of public health—would implement standard operating procedures for using the technology that would ensure public health. Yet, most of these rural people did not have a germ theory of disease.

**Godfrey**: You said it’s not a direct cause but a probabilistic cause—what do you mean by that?

**Barley**: In some of my early papers I talked about technology as an “occasion for structuring.” Every kind of change is the result of a large number of factors and forces. In many cases those factors and forces represent people who live in different social worlds or subcultures and who want the technology to satisfy different goals or interests. Most people think about technology as a means to a particular end, but in reality, technology is a means to multiple ends, and the ends that are ultimately achieved are not preordained from the beginning.

Every kind of change is the result of a large number of factors and forces. Most people think about technology as a means to a particular end, but in reality, technology is a means to multiple ends, and the ends that are ultimately achieved are not preordained from the beginning.

The second approach was numerical control, which allowed the tool to be programmed without having a machinist involved. Why did numerical control become the dominant design, causing record playback to fade into obscurity? Powerful parties who were interested in automatic machine tools were not interested in recorded playback. Although these parties’ interests were different, all were congruent with numerical control. The first actor was the U.S. Air Force, who at that time was interested in building jet aircrafts. To fly at near supersonic speeds required body parts with tight tolerances; otherwise, the aircraft would shake apart at high speed. The military...
felt they could get much finer tolerances with numerical control than through recorded playback. So, the military was willing to front a lot of money to develop numerical control. At the same time, mathematicians at MIT were interested in numerical control as an academic problem because it allowed them to investigate interesting mathematical questions. Specifically, numerical control required math and computer programs that could control five axes simultaneously. The mathematicians were the second set of actors. The third set was corporations, like General Electric, who were looking for the ability to make machine tools in ways that would cut machinists out of the process and turn the job of conceptualizing over to programmers. These are all very different agendas, but those agendas were able to come together in such a way that numerical control dominated while recorded playback languished.

Those are the kinds of dynamics that influence the implementation of any technology. Looking at numerical control, one party sees the ability to produce much more finely machined aircraft parts. Another party sees the opportunity to solve interesting mathematical puzzles, and a third sees an opportunity to change power relations on plant floors.

Godfrey: What do you do to help students or clients see the larger context in which technology will be implemented?

Barley: The major problem with technology is that people typically view technology as a means to achieve some end more efficiently or effectively. However, a technology may also have unanticipated outcomes. Often the people who are championing the technology don’t fully understand the nature of the problem the technology is meant to solve, or the people who are supposed to use the technology don’t see the problem in the first place. It may not be a problem for them. For example, a situation or a technology may mean something very different for management than it does to workers.

Godfrey: That was the toilet issue in Africa. The people who received the technology didn’t see the problem and were quite inconvenienced by the new technology. What are the two or three things people need to read to really come up to speed on the issues of technology?

Barley: Shoshana Zuboff’s 1988 book In the Age of the Smart Machine and Bob Thomas’s 1994 book What Machines Can’t Do: Politics and Technology in the Industrial Enterprise. There are numerous academic articles out there, but many of them are not easily accessible. Those two books are well written.

Godfrey: You talked at the very beginning about context and how technology plays out in a context. For someone who’s thinking about putting X technology in Y country, what would be the key contextual markers you would tell him to pay attention to?

Barley: Well, I’m such a contextualist that I would say you wouldn’t know unless you went into a country and observed. What you really need is an anthropologist. Aside from that, I would say a significant number of technologies fail because those who implement them don’t take into account the physical and social infrastructure or the tools needed for using and maintaining a technology.

Godfrey: Can you give us an example of physical infrastructure?
Barley: I remember reading a paper about the introduction of pumps designed to provide fresh water into regions of India and how these pumps ultimately rusted and ceased working because there were no tools or people to fix them.

Godfrey: And social infrastructure? In your study of radiologists, what were the social factors that determined how this new radiology technology was used?

Barley: Hospitals bought CT scanners with two notions. The medical notion was that the machines could help diagnose a whole variety of illnesses, in many cases less invasively than previous procedures. The organizational reason to adopt the machines was that they would bring a significant flow of income to the hospitals. In the early 1980s, patients were transported from one hospital to another to get a CT scan and then moved back to their original hospital, but the revenue went to the hospital with the CT scanner. So, there was a financial and medical reason to buy CT scanners.

What radiologists and administrators downplayed was that the CT scanner was a complex technology quite unlike other imaging technologies. The scanners were computational, but even more importantly, they created new kinds of images that practicing doctors were not trained to read. That meant if you somehow acquired a scanner, you had to figure out how you were going to operate the scanner and how you were going to read the images to provide accurate diagnoses. Some hospitals hired consultants to train radiologists, but there’s only so much you can learn about reading a set of images outside of day-to-day practice. Others went to another hospital to learn from people who were already doing it correctly. But the only way to really solve this problem was to hire young radiologists who had trained on scanners in medical school and to hire technicians who had learned to operate the machines at other hospitals.

The influx of new people changed the status structure in these radiology departments. Literally, the most recently hired radiologist knew more about this technology than the senior radiologists. The technicians that ran these machines came to know more about how the machines operated than the doctors did. What these hospitals had not anticipated was that this technology would bring about a fundamental social change in the relationships among radiologists and between technicians and radiologists.

*Sustainability requires, from the beginning, designing for the context in which the technology will be used. Instead of taking something that was designed for us, we need to look at the problem in the other country’s context and design for that context.*

Now, how much of this is transferable to another situation? This is a story about technological change in which the people who were likely to know most about the technology were people who were younger and just out of school. Their arrival turned a social structure, whose status previously rested on seniority, upside down. I can imagine scenarios where something similar might happen in a Third World country. Suppose you succeed in creating a class of technologically sophisticated young people. It is likely that doing so will have an impact on the country’s existing status structures. That is the kind of case where technologies would interact with social systems.
Godfrey: You live in Silicon Valley, and people there often believe information technology (IT) is radically different from any other technology and that all the old rules don’t apply to it. Is IT really so different from other technologies?

Barley: No, I think not. How is information technology going to change the world? Think about what you have to have for computers to change a Third World society. At minimum, people have to have a need for information. Think of the people at the base of the economic pyramid in a Third World country. How is a computer going to put shelter over their heads? How is it going to create food? How is it going to create security? Abraham Maslow’s hierarchy of needs tells us that if people are worried about where food or shelter is going to come from, it’s hard to think about self-actualizing or wanting to learn.

For a big chunk of the world, food, shelter, and security are far greater problems than self-actualization and learning. I don’t see how computers will solve those problems. Cell phones are another example. I have a Ghanaian student who tells me almost every person in Ghana has a cell phone, but many don’t have running water or enough to eat on a regular basis.

Godfrey: What are we missing in this discussion? What do you really want to talk about in terms of technology?

Barley: Some people in the engineering community are interested in using technologies to solve problems in Third World countries, and they want solutions that are sustainable. This is a new way of thinking. Sustainability requires, from the beginning, designing for the context in which the technology will be used. Most thinking about how to use technology to solve problems follows a simplistic logic: “If we just give them a bunch of laptops, they’ll be okay. We’ll ship technologies developed in the First World and give them to the natives, and they will then use them.” All instances of failed technology began this way.

There’s another way of thinking about technology and its role for bettering the lives of people in underdeveloped countries. Instead of taking something that was designed for us, we need to look at the problem in the other country’s context and design for that context. It’s an approach very similar to participatory design, involving users in the development of software and applications. This approach realizes that engineers in a firm somewhere in the United States are not really going to understand the context where the technology will be used. Without this understanding, they design in light of their own image of who the users are and what their needs might be. But these perceptions are usually incorrect.

Godfrey: That goes back to your point about anthropological knowledge. What would you tell NGOs to think about when in the design process? What would be the pros and cons of involving the clients in that process?

Barley: I would tell NGOs to bring the designers together with the users, to take them to the context for which they are designing. Most NGOs, I suspect, are not designers but rather facilitators and purveyors. If I wanted to solve a problem, I would get the designers and the users together in situ. At the very least, this would force an NGO to ask itself whether the people it wants to help will find the help helpful. The NGO may be interested in solving a problem that the client doesn’t think exists.

Godfrey: How do we do this in a world where most designs are cranked out by corporations whose goal is standardization?

Barley: I would turn it around and ask why we rely on corporations. I know for a fact that there are a significant number of young engineers who have the goal of using their knowledge to solve social problems in Third World countries. Why not facilitate or create arenas where these engineers and designers can collaborate with each other and with users? NGOs could afford to play such a role. Universities could also play a part. There might be a place here for professional societies or even for corporations, if they are willing to recognize that this is a much more substantive way to be socially responsible.

Godfrey: And that would be a role for NGOs—to become nodes that bring together different social entrepreneurs and clients to solve these problems. They could be places where problems and solutions come together.

Barley: Absolutely.
Reason: Christianity to Capitalism
by M. Assunta Forgione | illustration by Tyler K. Pack
The Victory of Reason offers an interesting view on the genesis of freedom, capitalism, and western success. Rodney Stark begins by explaining why reason could only evolve through Christianity by comparing its underlying assumptions to other forms of faith. Then, he proceeds to show how by assuming the possibility of progress, monastic estates provided the way towards technical and organizational innovations, which led to the beginnings of commerce. In order to understand the rise of capitalism, the author appropriately dedicates part of the book to explain the notions of individualism, freedom, and human rights. He demonstrates how reason influenced political philosophy and practice to the extent that states were responsive. Accordingly, Stark shows how societies that enjoyed a considerable degree of freedom also experienced a rapid spread of capitalism, while those societies led by tyrannical leaders experienced feudalism. Stark’s arguments provide uncommon insight, but his analysis leaves some unanswered questions, particularly concerning the role of reason on economic and human development in less-developed countries today.

Christianity necessitated an image of God as a conscious, rational, supernatural being of unlimited power and scope who cares about humans and imposes moral codes and responsibilities upon them. This idea generates serious intellectual questions about the nature of those codes and responsibilities. The Christian image of God was that of a rational being who believed in human progress and who more fully revealed himself as humans gained the capacity to better understand. Consequently, Christian theologians devoted centuries to reasoning about what God may have really meant in certain scriptural passages. In comparison, the author suggests that since the “pure” forms of faiths in the East were godless and postulated only a vague divine essence, they had little to reason about. Conversely, although Judaism and Islam embraced the image of God sufficient to sustain theology, they approached scripture as a law to be understood and applied rather than as the basis of inquiry for ultimate meaning.

Therefore, the author asserts that the fundamental theological and philosophical assumptions necessary to forge towards progress were not present in religions other
Stark’s insight that the roots of capitalism do not lie in the Protestant work ethic, but rather in Roman Catholic tradition allows the reader to see history in a whole new light.

than Christianity. His argument is problematic, however. First, from my understanding, all religions have their own forms of rational reflection. The extent to which reason is used will differ from one religion to another, but a rational motive for a belief exists whether that motive encouraged individuals to simply acknowledge ideas or to challenge them. Second, Stark uses the term theology to make his comparison, yet there are some debates on the appropriateness of using the Christian-derived term to refer to reasoned discourse within other religious traditions. The author should have informed the reader of the controversy over the term theology since his logic was fundamental to establishing the source of reason.

Looking specifically at Christianity and medieval Europe, Stark fittingly explains how reason and the possibility of progress contributed to freedom and capitalism. The underlying assumption to better understand the nature of God (i.e., reason) led to the possibility of progress. Hence, having faith in human progression provided medieval Europe with a template that could be applied towards technical and organizational innovations. For this to occur, reasoning had to have taken place because commerce was initially viewed as a degrading activity that involved great moral risk. Eventually, after Constantine’s conversion in 312 CE (Common Era), the accepted view was that commerce was not inherently wicked and that it was up to the individual to live righteously, giving legitimacy to both merchants and churches in commerce.

The earliest forms of capitalism appeared around the ninth century, and technological innovations followed in diverse areas. Innovations in agricultural production, for example, included the adaptation of waterpower, windmills, the horse collar, iron horseshoes, the heavy wheeled plow, and the adoption of the three-field system. The gains achieved by these inventions reduced the need for farm labor, increased their yields, and facilitated the formation of towns and cities.

As estates grew into small cities, they became more dependent on trade. This led to the widespread building of roads and bridges. Accordingly, Europeans developed the means for long-distance transportation of heavy and bulky goods. They designed wagons with brakes and with front axles that could swivel, and created harnesses that allowed large teams of horses or oxen.

Capitalism rested upon free markets, unforced labor, and secure property rights. The innovations laid the foundations for capitalism to expand, but expansion could only occur where freedom was permitted, and freedom existed only in responsive regimes. According to the author, it was Christianity that provided the moral basis for the establishment of responsive regimes in medieval Europe.

The reader learns of the progression towards freedom as a result of reason. Initially, the early church fathers were against private property rights because they claimed that God originally intended that all things be held in common. Through reason, support for private property rights became the prevalent view. Thus, Christian theologians such as Saint Augustine, Giles of Rome, John of Paris, Saint Albertus Magnus, Pope John XXII, and William of Ockham became increasingly critical of the moral authority of the state. By affirming the secularity of kingship, the church made it possible to examine the basis of worldly power and the interplay of rights and rule. Consequently, these theologians had great influence in shaping Christian political sensibilities that brought about freedom.

Another contributing factor to the development of responsive regimes was the size of the political units that ruled. Due to the geographic and cultural impediments of Europe, unity was limited. During the fourteenth century, there were about one thousand independent states in Europe. This had several important consequences. First, it made for weak rulers. Second, it provided an environment of creative competition. Third, it offered the people a chance to depart for a setting with more liberty and opportunity. As a result, some of these states began to develop highly responsive governments.

Responsive regimes were first achieved in the ninth century in certain northern Italian city-states. Italy was the ideal location because the states were able to play off imperial, papal, and Byzantine ambitions to establish and maintain independence. Their political influence was dispersed among various interest groups, such as merchants,
bankers, manufacturers, workers’ guilds, and the traditional rulers of the time (i.e., aristocracy, military, and clergy).

As the regions exercised more freedom, commerce flourished. Monks provided the first business model, and the private Italian capitalists perfected and expanded capitalism by making commercial trade routine, repetitive, and as safe as possible. As a result of their ingenuity, Italians became leaders in foreign trade, and expanded capitalism to northern Europe.

Stark explains further that as Europe entered the seventeenth century, tyranny impeded capitalism in France, Spain, Italy, and the southern Netherlands while a considerable degree of freedom in England and Holland initiated many centuries of industrial growth. The two greatest land powers at that time, Spain and France, had faith in progress and reason. Why was reason not victorious? The author claims that the French and Spanish were unable or unwilling to produce things for themselves. They focused on their territorial ambitions and spent a large part of their resources to sustain very powerful military forces.

If reason was present, and the author claims that it is the source that led to freedom and capitalism, why did it fail to overthrow tyranny? In nonresponsive countries, does reason have any influence? The author makes the distinction that England and Holland were predominantly Protestant while Spain, France, and Italy were Catholic; yet, all these countries practice Christianity. The author should have clarified the role of reason in the two religions to strengthen his argument. We need to understand how the division brought on by the Reformation helped bifurcate economic development within the Christian world.

How valid is Stark’s argument about reason and capitalism today? Stark’s analysis of economic progress was carried over to North and South America. According to the author, North America was modeled on England while Latin America re-created Spain. As British colonists, North Americans inherited extensive freedom and a capitalist economy. On the other hand, Spanish colonists in Latin America inherited a repressive and unproductive feudalism. He disagrees with the dependency theory, which claims that the root of the problem in underdeveloped countries stems from their dependence on advanced nations, but he does not justify his position.

Stark concludes that Latin American countries are finally developing the basis for effective capitalist economies, and as long as they do not revert to their old command economies, they will grow. The book left me wondering exactly how reason can guarantee that Latin Americans stay on the path of growth. With this book, Stark made an attempt to link the past to problems experienced today in Latin America, but the mere fact that he dedicated only part of one chapter to this serious dilemma demonstrates that the claim made for reason is too simplistic.

Stark’s insight that the roots of capitalism do not lie in the Protestant work ethic, but rather in Roman Catholic tradition allows the reader to see history in a whole new light. Although it was interesting to read about economic progress during medieval Europe, the true value of reading this book would be to explore how lessons learned could be applied to economic progress today, particularly in Latin America.

Despite some of the gaps in his arguments, Stark’s way of looking at the history of economic progress could benefit NGOs that are trying to build economic self-reliance around the world. For example, NGOs could learn from the strategies used by ecclesiastical leaders to reason with political leaders in an effort to mold more responsive regimes. NGOs dedicated to advocacy work could implement similar strategies to have greater influence on government policies that could promote economic self-reliance. Also, NGOs devoted to development could learn from the strategies used by monastic estates to foster innovation and commerce. These strategies could be integrated into their current strategies to encourage business development and improve economic self-reliance in all geographic areas.

Endnotes

ABOUT THE AUTHOR

M. Assunta Forgione possesses an MBA from the University of Western Ontario with extensive entrepreneurial experience. Throughout her professional career, she held leadership positions in business associations and charitable organizations, including the Canadian Italian Business Professional Association, Toastmasters International, Alliance for Young Smiles, and the 1998 Paralympics volunteer efforts. Her interests in international development led her to Utah where she is currently completing a master’s degree in education (with a focus in comparative international development education) and a doctorate degree in instructional psychology and technology. Her goal is to dedicate her career as a researcher to improve the quality of education in less-developed countries.
Pro Mujer

Pro Mujer is a women’s development organization whose mission is to provide Latin America’s poorest women with the means to build livelihoods for themselves and futures for their families through microlending, business training, and healthcare support. It establishes sustainable MFIs that offer credit and training programs geared to the needs of poor, undereducated women who either operate or would like to operate a small business.

Bolivia houses the flagship program for Pro Mujer. Serving for nearly fifteen years, the program has over sixty-eight thousand borrowers. It offers loan capital for the women’s small-scale businesses and provides opportunities to save a portion of their profits through the communal bank structure.

For these women, credit alone does not serve their needs. Pro Mujer provides an alternative delivery system for its credit services—the group-oriented communal banks—that appeal to women traditionally accustomed to working in community groups. Pro Mujer also offers integrated credit and training services, which few other organizations offer, as well as business training, personal-development education, legal education, and health-related services.

Pro Mujer constantly looks for ways to improve their services. In line with their mission statement, they are always striving to give a lot more to their clients than just credit and savings services. They provide a myriad of services aimed at improving the overall quality of life, development, and health of both their clients and their families.

Visit www.promujer.org for more information.

Single Mom Foundation

The Single Mom Foundation (SMF) is committed to improving the lives of single moms by helping them return to school for additional and appropriate training. SMF is creating a network of educational partners who will work together to help more single moms achieve their educational dreams and develop long-term self-reliance.

SMF’s partnership with the ESR Center has already resulted in the gathering of practitioners, researchers, and community leaders throughout Utah to foster mobilization and change. This impressive coalition of practitioners is working to help identify the emotional and institutional barriers that face single moms returning to an educational environment, and to study the impact a marketable education and skills have on long-term self-reliance.

Today, SMF is using research to understand how to help single moms build an educational foundation for the future. For single moms and their children, the tangible outcomes of getting an appropriate education are significant: higher wages, greater job security, better health insurance, stable housing, etc. SMF is focused on increasing the intangible benefits as well: self-esteem, confidence, career satisfaction, etc.

Education is the key to a vast ripple effect. The educational connections SMF provides benefit the lives of single moms, who in turn positively influence the lives of their children. Those children will then improve their communities and, ultimately, the world.

Visit www.singlemomfoundation.org for more information.
FINCA International

The Foundation for International Community Assistance (FINCA), founded in 1984 by John Hatch, provides financial services—primarily small capital loans—to the world's lowest-income entrepreneurs via a global network in twenty-one countries.

The core of FINCA's mission is to promote a systematic and generational impact on poverty by providing business loans on a massive scale in a sustainable way. FINCA's village banking methodology has been replicated by hundreds of microfinance programs globally. A key principle in village banking is the management of the bank by the borrowers themselves, with guidance and support from the FINCA loan officer. Clients elect officers to serve as president, secretary and treasurer on a rotating basis, and receive a group loan distributed among its members. This peer lending model creates a strong bond between the members of the group to support one another in their endeavors so they can repay their loans promptly.

FINCA is partnering with other organizations and universities to broaden its outreach and to enhance its services. FINCA Malawi, in a joint effort with the Johns Hopkins University Bloomberg School of Public Health’s Center for Communication Programs (CCP), provided peer education training to four hundred village bank members. The bank members then volunteered within their village banks and local communities to offer HIV/AIDS awareness, prevention, and education information to more than five thousand of their fellow clients.

The Life Savings Partnership, as the project was coined, saw significant improvements in knowledge about HIV/AIDS, comfort in interacting with people with AIDS, and rates of HIV testing. FINCA believes projects like this will better equip clients for self-reliance and productivity.

Visit www.villagebanking.org for more information.

Microcredit Summit Campaign

The first Microcredit Summit was held in February 1997 in Washington, DC. Nearly three thousand people from 137 countries gathered to address issues of global poverty and self-reliance. Together, the delegates launched a nine-year campaign with the goal of reaching 100 million of the world’s poorest. They wanted to ensure a positive, measurable impact through financially self-sufficient institutions that reach the very poorest and empower women.

Nine years later, in 2006, with their previous goal nearly met, a Global Microcredit Summit was convened in Halifax, Nova Scotia, to assess the progress and to establish two new goals: (1) ensure credit for 175 million clients and their families and (2) raise the income of 100 million families above US$1 per day.

The Microcredit Summit Campaign holds global summits, as well as regional conferences, in Asia, Africa, and Latin America. These meetings bring together practitioners, advocates, educational institutions, financial institutions and nongovernmental organizations to work toward overcoming barriers to reach its goals and forward the learning agenda.

Brigham Young University has worked closely with the Microcredit Summit Campaign for the past five years to further the best practices of microcredit. Ned Hill is the dean of the Brigham Young University Marriott School of Management and the co-chair of the Microcredit Summit Campaign Council of Educational Institutions.

Visit www.microcreditsummit.org for more information.
The Economic Self-Reliance Center at Brigham Young University houses various initiatives on which university students and faculty partner with organizations to engage in activities that promote economic self-reliance. One of these initiatives is the Single Mom Initiative (SMI). During 2006 the Single Mom Initiative has accomplished a great deal to help the increasing number of single mothers in Utah become economically self-reliant.

The number of single-mother families in the United States has tripled over the last thirty years. There are now more than fifty thousand single-mother households in Utah. While their numbers are increasing, single-mother families remain disproportionately represented among the working poor. Nearly 30 percent of Utah’s single-mother families live below the poverty line. Single-mother households are five times more likely to be below the poverty line when compared with two-parent households.

In 2005 BYU’s Economic Self-Reliance Center and the Single Mom Foundation joined forces to create the Single Mom Initiative. The SMI is a multi-year, multi-disciplinary research effort with the goal of improving knowledge about the circumstances of single moms in Utah, the unique challenges they face, and the interventions that best promote their economic self-reliance.

The SMI began with a review of academic literature and secondary data sources relevant to single mothers in Utah. A summary of the literature and data was presented in a learning lab (or small workshop) held in May 2006 and attended by twenty-eight researchers and practitioners from fourteen organizations.

The learning lab allowed the SMI to not only share its findings with researchers and practitioners, but also to receive input into creating the SMI’s initial research focus. The learning lab attendees narrowed down a long list of issues facing single mothers to four top concerns: education, financial assets, childcare, and emotional well-being. These four issues have become the initial research focus for the SMI.

Since the May 2006 learning lab, the SMI has begun working on several research projects. The SMI has been preparing for a statewide survey of single moms that began in February 2007. The SMI also began a project in partnership with the Utah Individual Development Account Network, a nonprofit organization operating a matched savings program for low-income people. The SMI will examine the impact of the program on single mothers and their families.

The SMI believes these and other projects will provide researchers and practitioners with a wealth of information about single mothers in Utah, information that can be used by practitioners to improve the supports available to single mothers as they progress towards economic self-reliance.
Help the world’s poor to become more economically self-reliant by using these handbooks to teach basic microenterprise principles. The *Where There Are No Jobs* handbooks are being used in more than a dozen countries, and have helped nearly 1,000 international students experience business success.

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VOLUME 3
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VOLUME 4
39 Summaries and 9 Case Studies of Microfranchise Opportunities

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The Intel World Ahead Program hopes to benefit 100 million students through their new technology by 2011. Read more on p. 20.