

COMPETE PROJECT
INFORMATION AND COMMUNICATIONS TECHNOLOGY
STRATEGY FOR SUPPORTING COMPETITIVENESS IN UGANDA
November 2001

I. INTRODUCTION AND PURPOSE

USAID/Kampala's COMPETE project is designed to improve the competitiveness of Ugandan enterprises in the coffee, cotton, and fisheries sectors. An emerging component of competitiveness in each sector is access to Information and Communications Technologies (ICT).¹ The liberalized telecommunications environment in Uganda and the relatively fast growing ICT sector, offer unique opportunities for COMPETE to develop ICT-based approaches to improve the competitiveness of firms in the three selected export sectors. This paper describes COMPETE's proposed ICT strategy.

Given the possibilities opened up by ICT today, developing and emerging market countries, along with the international donor community, are seeking innovative ways to use ICT to support economic growth. National strategies generally have two aims: first, to develop the ICT sector itself as a source of national income, jobs, and exports (e.g., ICT as an "end"); and, second, to leverage ICT to improve productivity and competitiveness of firms (e.g., ICT as a "means"). It is in the latter area that COMPETE will concentrate its efforts. COMPETE will focus on how ICT applications can be used to support competitiveness and quality in each of the three sectors by accelerating access to and utilization of technologies that improve the performance of producers, processors, and exporters. TO the extent possible, we will leverage those opportunities to support development of the ICT sector.

The proposed strategy is guided by the realities of the current ICT context in Uganda and the priorities outlined in the sector working group action plans for coffee, cotton, and fisheries.

II. RELATIONSHIP OF ICT TO COMPETITIVENESS

In the US, between 1973 and 1995, productivity growth (as measured by output divided by hours worked) jumped from 1.5 percent a year to between 4 and 5 percent from 1998 to mid-2000. Economists and other observers hailed this growth as the result of structural changes in the economy due to the explosion of ICT spending. The recent downturn in the US economy, however, has caused many to question this assumption (statistics are currently being revised down). It is probably safe to say

¹ For the purposes of this strategy, the term "information and communications technologies," or ICT, is defined as "electronic means of capturing, storing, and communicating information." Modern ICT generally includes telephones, fax, photocopiers, computer hardware and software, and the Internet (both e-mail and World Wide Web). Technologies such as radio and television are not included in this definition.

that ICT spending increased the productivity of the ICT sector, but studies show that many specific industry sectors have yet to see any productivity or efficiency benefits. Yet, there continues to be perhaps undue optimism that ICT can allow countries to “leap frog” the development process to achieve high levels of growth rapidly.

The reality is probably somewhere in between. It is clear that certain applications can improve efficiencies and save costs for companies. Increased access to information can help companies more effectively target markets or provide customer service. And, in a knowledge-based global economy, the capability provided by ICT to collect, store and share information is fast becoming the most critical factor in the competitiveness of many industries. But in order to attain the benefits offered by ICT, enterprises need, first of all, access at prices they can afford, secondly, content or applications that provide tangible value to their bottom line, and thirdly, the ability to use ICT effectively. In short, in order to turn the promise of ICT into real increases in productivity and efficiencies—or, competitiveness—enterprises need low-cost access, relevant content, and skills. The essence of the so-called “digital divide” is that countries enjoying these three factors are benefiting from the efficiencies brought by ICT, while countries lacking those factors are falling further behind.

The challenge to utilizing ICTs to support competitiveness in Uganda under COMPETE will be the fact that these three essential factors are to a large extent absent. Our approach will be to seek opportunities to create access, content and skills in the sectors, while leveraging existing capability to support pinpoint solutions to specific competitiveness issues.

A. THE COMPETITIVENESS DIAMOND

The stakeholder working groups for coffee, cotton, and fisheries utilize the competitiveness “diamond” approach to identify and structure their strategies. This approach focuses on four elements, including the structure and strategy of the private sector, the factors of production, the nature of market demand, and the degree of collaboration among the cluster of firms, supporting industries, government agencies, business associations, and financial institutions. In each of these areas, the strengths and weaknesses are identified and the actions necessary to address them prioritized for implementation.

Where does ICT fit into this framework?

Structure and strategy of the private sector. The ability of firms to strategically utilize ICT to increase efficiencies and reduce costs can make them more competitive. ICT provides the capability to collect, store and share information that will influence both the strategy and structure of the firm.

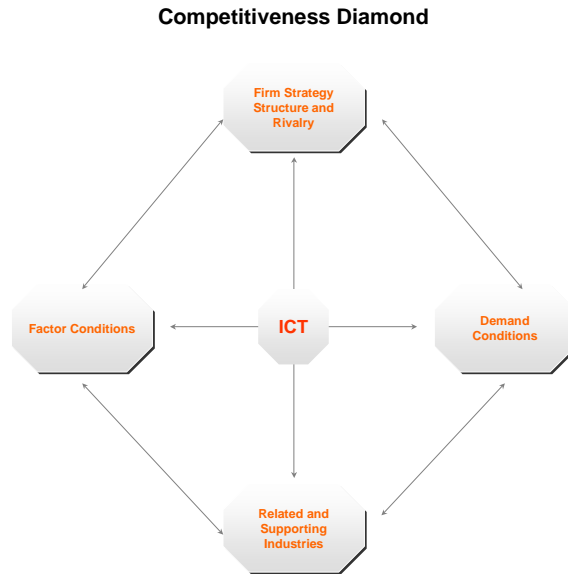
Factors of production. ICT is a factor of production in the sense that it is an input. The capability provided by ICT to obtain and utilize market and customer information in the development and production of products or services is key to firm

competitiveness. ICT provides new ways for firms to link directly to customers to both provide services and to obtain feedback.

Nature of market demand. The role that ICT can play in marketing provides the cluster with the ability to influence demand, not only by improving understanding of the customer’s needs, but by improving the ability of firms to respond to those needs and even to shape them.

Collaboration within the cluster. The ICT sector is a critical “supporting industry” in the sense that it provides both infrastructure and services.

Although ICT is becoming a key competitive factor in the success of global industry, in Uganda it is not yet a critical element of the competitiveness strategies of the sectors. Under COMPETE, we will engaged the ICT sector directly in the stakeholder working groups as a key “supporting industry” to identify ways to incorporate ICT into the sector strategies that is tailored to their specific needs.



III. OVERVIEW OF ICT IN UGANDA

COMPETE’s ability to achieve the aim of incorporating ICT into sector strategies, depends largely on the opportunities offered by the current ICT sector. While there are many opportunities, there are also limitations to what can be done in the short term.

Uganda has experienced explosive growth in the telecommunications sector due to its decision to allow a second national operator, MTN, and three mobile phone licenses (UTL, MTN, and Celtel). This decision created intense competition that has resulted in investment and growth, particularly in expansion of mobile phone coverage, which has grown at a much faster rate than fixed lines. The intense competition has caused prices to fall. The growth in mobile phone coverage provides a promising opportunity for the COMPETE sectors, which together comprise 1.2 million smallholders or fisherfolk located in rural and remote areas.

USAID sponsored an assessment of the ICT sector in April 2001², which describes the ICT sector in the following terms:

The growth of the mobile telephone industry has already led to profound changes in the overall telecom network. All of Uganda's regions have regional telecom presence, with the central and southern regions being the most densely connected. MTN, UTL, and Celtel are actively building on these regional distribution points by developing their own national wireless transmission "backbones."

Celtel is building six new stations around the country, and reportedly investing \$10m in its network.³ MTN is using wireless local loop (WLL) technology to connect regional centers to its national hub. This expansion, which should be completed in 2003, will enable these centers to have mobile phone service, as well as Internet and data transfer capability ranging from dedicated 64kbs to 11mbs.⁴ Finally, UTL is currently developing a link from Mbarara to the Kenyan border, and plans to establish a microwave link between Gulu and Kampala. UTL also is looking to build a 2,000-line digital exchange in Gulu as well as a local cable network.⁵

The completion of the operators' three backbones will likely enable large parts of the country (particularly at the district level) to receive broadband access and reliable telephone service at greatly reduced rates.

The telecom providers' aggressive rollout and marketing strategies, as well as the decline in interconnection costs have caused steep price reductions for consumers.⁶ This has been pronounced in the mobile phone market, especially since the advent of UTL.

As of April 2001, the mobile providers were offering rates of 250Ush (US\$0.15) per minute, and all cell phone calls are treated as local calls. Moreover, UTL's new Mango mobile phone package gives new subscribers low cost connection fees and no monthly charges for up to four months. Celtel has responded by charging its clients in Ugandan shillings as opposed to dollars.

² ICT Developments in Uganda and Their Implications for USAID Programming, CARANA Corporation, April 12, 2001.

³ This network expansion is expected to serve the towns of Soroti, Mbale, Lira and Gulu, and to connect these towns with Arua (which already is on CelTel's network).

⁴ MTN's Wireless Local Loop network will be installed in six sites, based on 64-128kbs. Customers will be expected to pay about 400,000Ush for equipment and connection.

⁵ UTL's microwave network will feature a group of 63 2mbs lines from Kampala to Gulu, as well as from Kampala to Mbarara. The Kampala-Gulu project is dependent on the disbursement of a loan from the World Bank's International Development Agency (IDA).

⁶ Interconnection costs refer to the amount of money that one telecom operator charges another operator to terminate calls on its network.

Bandwidth prices (i.e. data transmission capacity on the operators' network) are also reportedly declining, as operators are competing with each other to sell capacity to their clients. For example, MTN's standard charges for dedicated connections were cut by 50% in early 2001, and MTN officials anticipate that a further price decrease will take place this year.

The network expansion and fall in prices appears to have generated an explosive growth in the demand for telephones. In 1996, there were approximately 48,000 subscribers (3,000 mobile and 45,000 fixed). Currently, Uganda's operators have some 275,000 subscribers (190,000 mobile and 85,000 fixed), a sevenfold expansion.⁷ To deal with the intense competition, UTL has been forced to provide mobile phone service (the "Mango Phone", announced in April 2001), upgrade its antiquated infrastructure, and offer promotional deals to capture customers. Celtel recently purchased Uganda's leading ISP, Infocom, while MTN and UTL have both announced plans to rollout ISPs themselves.

According to a UCC sponsored study,⁸ unmet demand for voice services is high:

- At least 50% of rural households would make calls on a regular basis.
- Users preferred to pay on a call-by-call basis rather than purchasing calling cards.
- Seventy-five percent of respondents said they would prefer to own a personal phone if it was affordable.
- Twenty seven percent already make phone calls.

In the addition, the GOU is developing a national ICT strategy that will provide more coherency to its effort to grow the sector, including addressing spectrum allocation, e-commerce, voice over internet protocol, and intellectual property rights.

At the same time, penetration of ICTs is low due to high costs, lack of relevance/familiarity, and lack of skills. Unlike voice service, the UCC study found that less demand exists for fax, Internet, and email in rural areas. Almost all Internet users are located in Kampala (a growing market nonetheless) and use the Internet primarily for email. There are few sophisticated web sites and e-commerce platforms are almost non-existent. Given high costs of equipment and service, and little tangible benefit in the local market, it is hard for companies to see the value added of utilizing ICT. Since most companies produce for the local market, B2C is irrelevant. The infrastructure necessary to support Internet service (electricity, district level dialup access) is non-existent in many parts of the country and small

⁷ MTN has over 140,000 subscribers, compared to CelTel's 50,000 and UTL's 85,000.

⁸ *Policies and Strategies for Rural Communications in Uganda*, Draft Final Report to the Uganda Communications Commission, Intelcon, 22 January 2001. The survey population included 640 households and focus groups and interviews in 16 sub-counties nationally.

local markets make it commercially unattractive to invest in local points of presence (POP).

Given the current context, COMPETE will focus on the opportunities offered by the rapidly expanding mobile phone system, and minimize approaches that require access to computers and Internet in the short term. Regardless, the Internet will remain a critical tool in supporting efforts to reach external buyers.

IV. OVERVIEW OF SECTOR PRIORITIES

Each of the sector working groups has developed an action plan to prioritize activities and guide implementation. The priorities defined for each sector set the primary parameters—along with the realities of ICT sector capability—for the ICT strategy. In every case, the issue of quality is paramount and the ICT strategy will be to seek interventions that support or create incentives for quality in each sector.

Coffee. The coffee working group has defined three key priorities for increasing competitiveness:

- Improving and enforcing quality regulations
- Developing an auction for Arabica and high-quality washed Robustas, with a premium placed on strengthening and promoting an image of Ugandan quality among external buyers
- Introducing environmental standards, including bird-friendly and shade-grown production practices, as a marketing tool to support the image of Uganda coffee.

Cotton. In the cotton sector, improving quality and increasing production are the key priorities. The opportunity to take advantage of market opportunities opened by AGOA is also a driving force behind quality and production improvement. Priority activities include:

- At the production level, establishing demonstration plots, improving access to inputs, supporting targeted research, handling practices, and promoting larger scale production
- At the ginning level, conducting audits to identify and address utilization and quality control weaknesses
- At the value adding level, conducting audits of spinners and textile mills to identify and address utilization and quality control weaknesses; identifying steps needed to qualify under AGOA; promote value adding opportunities
- Support activities include improving access to finance, market information and institutional support.

Fisheries. In fisheries the key challenge will be to improve the quality and value from existing stock and increase production without depleting the stock. Key priorities will be:

- Improving the production value of existing harvest
- Introducing reproductive biology practices with hatchery trials
- Testing in-lake net cages and creating a monitoring and modeling program to examine environmental and productivity impact
- Facilitating finance and credit to support rollout of net cage trials
- Supporting the new fisheries management plan
- Improving the infrastructure in the sector, with a focus on landing sites.

From the ICT perspective, two key challenges face all three sectors:

- The need to reach a very large, dispersed rural population with specific information to improve production practices; and
- The need to reach external buyers with information about Ugandan quality.

There are multiple means for addressing these issues, and no one mechanism will be entirely successful alone. Given that COMPETE has a mandate to consider the utility of ICT in supporting competitiveness, we will seek solutions to these issues that are based on the realities of the current ICT capability in Uganda, cost effective, and local demand driven. Thus, while radio will continue to be the most broad-based mechanism for rural communications, wireless voice service is clearly becoming a mechanism that can be dynamically exploited to reach rural communities. Giving rural communities access to telecommunications services, as discussed above, gives them a tool that can be used in a variety of ways to improve competitiveness.

In the second case, the Internet offers creative possibilities to support the quality control process, by providing accountability and verification of quality, while linking producers directly to buyers and to end users.

V. ICT STRATEGY

A.1. Assumptions

Taking into consideration the realities of ICT, lessons learned from past experience in Africa, the current ICT context in Uganda, and the goals of the COMPETE project, the following assumptions have been defined to guide the strategy:

- COMPETE will focus on ICT as a tool, or means, to achieving competitiveness, not simply as an end in itself. In other words, the aim is not to introduce high

technology for its own sake, but rather to find relevant, cost effective and scalable solutions that can be easily applied and replicated in Uganda.

- Greater access to information and communications technologies improves the competitiveness of firms.
- In rural areas, mobile phones will be the most cost effective form of communication, after radio.
- Internet-based approaches that require farmers or fisherfolk to have access to computers are not viable in the short term. The Internet will be used, however, to create linkages with external buyers.
- What is likely to be done in each sector depends on demand and opportunities in that sector; consequently, approaches will be tailored for each.
- Given the limited resources available for implementation under COMPETE, the role of the project will be primarily to design pilots in coordination with key stakeholders (ICT companies, industry associations, etc.) who will be the primary implementers in collaboration with each other.

A.2. Strategic Framework

The COMPETE ICT strategy encompasses the following elements:

Directly engage the ICT sector as a supporting industry. Assuming, as we do, that access to ICT is a factor in competitiveness, it is logical that the ICT sector should be an active participant in cluster organization. Consequently, COMPETE will seek to include ICT sector members in the sector working groups or, alternatively, to create a separate ICT working group that includes both ICT and sector participants from all three sectors. Collaboration with the ICT sector will improve the understanding of sector stakeholders of the value and opportunities opened by ICT, while providing the ICT sector with valuable information and networks within the sectors that represent a large potential market for low-cost services. This approach will allow the sector working groups to better identify ways to incorporate ICT into the sector strategies that are tailored to their specific needs.

Seek opportunities to create low-cost access, local content, and familiarity/skills. The intense competition among the cell phone companies to gain market share in rural areas has caused them to focus on the creation of low-cost services for rural customers. This competition can be leveraged to accelerate the expansion of services to rural areas where the sectors stakeholders are concentrated. COMPETE can use its knowledge of the sectors to work with the cell companies to create relevant services and to aggregate demand in a way that makes service provision commercially viable for the cellular service providers.

Leverage existing demand. Based on numerous studies as well as anecdotal evidence, it is clear that the demand for voice services (telephones) is extremely high, while demand for fax and Internet is low. Therefore, rather than seeking to *create* demand for Internet, when it is still not clear how it will benefit stakeholders in the three sectors, we will leverage *effective* demand for voice service and market information (content) to get low-cost cellular service into rural areas where the three sectors are concentrated. By focusing on existing demand, COMPETE can catalyze a market driven and sustainable expansion of telecommunications services to the

sectors. Once enough volume is achieved, prices will start to fall, creating access for more rural customers. Once customers become familiar with the technology, cellular service providers can begin to offer more sophisticated services, even wireless Internet access, tailored to the needs of their customers. This approach is based partially on the experience of MTN in South Africa in successfully expanding rural coverage by offering relevant content through cellular phones. At the same time, it is very much a response to the lessons learned by donors in Uganda and through out Africa, in trying to get ICT services into rural areas in a way that is sustainable for the local community.

For example, one of the telling results of the Nakaseke telecenter project in Uganda was that the fixed phone line, installed to create Internet access, was used primarily for telephone calls and that customers used telephone services more than any other service provided by the telecenter. Had the project only installed a phone line, the telecenter probably would have been able to cover its operating costs based on reselling phone time, while gradually building additional services to meet the needs of the local market. In fact, however, the multimillion-dollar up front investment in a full service telecenter, before demand for the services (such as Internet) existed, effectively eliminated the chances that the telecenter would ever be sustainable. The costs of operation and maintenance could not be covered by the revenue generated from services since demand was negligible. While the center provides valuable services to the local community, including a library, it can only survive as long as subsidies are available. Thus, our conclusion that the existing demand for voice services provides the most viable basis for introducing ICT to rural areas.

It is interesting to note that the same dynamic was present in the downfall of the *dot.coms* during the so-called dot.com revolution in the United States. While many of the sophisticated technologies and websites that were introduced and financed during that period were extremely innovative, they did not reflect effective demand among consumers for Internet-based services. The aggressive “branding” campaigns were a reflection of the fact that entrepreneurs were developing services before demand existed, and *then* attempting to generate the demand they would need to become profitable. Needless to say, most failed and we see the consequences in the stock market today. On the other hand, if we look at those that succeeded, such as Amazon and *e-bay*, it is clear that they succeeded because they offered something people wanted (content) in a way that matched their behavior (delivery).

Consequently, our approach is based on addressing current effective demand (e.g., voice), and leveraging it to generate volume that can support development of additional low-cost services as the market grows and users become more familiar with the technology and its value.

Create content to drive demand growth. The second most important lesson from Nakaseke, is that Internet often fails to catch on because there is little local content or relevance that creates tangible value for rural users that then drives demand for the service. Access without relevant content will not succeed in demonstrating the value that ICTs can bring to users. Consequently, COMPETE will focus on the information needs of the sector stakeholders to develop content and applications that bring tangible value to users that can drive demand for ICTs. Since cellular

service is the fastest growing and most cost effective ICT available to reach rural areas, COMPETE will look at the kind of information that can be delivered through a wireless cell phone handset, using both voice and text platforms.

To support this effort, COMPETE is undertaking an information needs assessment in each sector to identify the most critical information needs of stakeholders (what they feel they need or would pay for, not simply what donors think or know they need) and the mechanisms by which they obtain and share information. By addressing the immediate needs of the stakeholders COMPETE can quickly bring value to the stakeholders and gain momentum for addressing the more difficult competitiveness issues identified in the action plans. And if COMPETE can succeed in leveraging low costs access and with relevant content that increases the availability of telephones within the sectors, it will have created an effective communications tool for reaching out to stakeholders. While radio will continue to be the most effective way to reach a wide audience within the sectors, it represents a passive and one-directional flow of information. Increased access to telecommunications service within the sectors provides two-way, interactive communications capability that can create direct interlinkages among cluster stakeholders, including producers, processors, exporters and even external buyers and end users.

Again, in looking at trends in the US and European markets, what is interesting to note, is that wireless service providers are reacting to the market correction by readjusting and tailoring their services to match existing demand, and moving from consumer applications to enterprise applications. According to Lee Bruno of *Red Herring*, “what’s needed is less hype and more applications and services to drive demand.”⁹

Avoid the digital divide by bringing in microfinance. While it is clear that demand exists for voice service (access) and for market information (content), it will remain difficult for most individual farmers or fisherfolk in rural areas to afford cell phones or service. And even though prices have fallen, they remain out of reach for many, and low volumes of service in rural areas make it commercially unsustainable for cellular service providers to reduce prices any further at this time. COMPETE will seek to aggregate demand through associations and producer organizations and engage micro finance institutions (MFIs) in the effort to extend value adding ICT services to the sector stakeholders by creating new lending mechanisms. (In effect, MFIs are also “supporting industries” and should be included in sector working groups.) Several MFIs in Uganda have partnered successfully with the cellular phone companies to finance cell phones for community groups and have demonstrated that their models are financially viable. In fact, some borrowers have paid back loans ahead of schedule due to their ability to re-sell service at a markup.

COMPETE can play a facilitating role in bringing the MFIs and cellular companies together with sector stakeholders to identify financial instruments and risk sharing

⁹ Lee Bruno, Wireless-app developers focus on the need of today’s enterprise sector,” *Red Herring*, July 15, 2110, p. 92.

arrangements that can support the goals of each. Adding micro finance to the mix also provides valuable leverage for encouraging compliance with environmental and quality standards; for example, in fisheries, those not complying with regulations regarding minimum net size, will not be eligible for financing.

Leverage private sector strategies and leadership. Since COMPETE is not in a position to implement, we will focus on leveraging existing private sector strategies to develop pilots that support the objectives of the project. Conversely, we will avoid activities that distort or displace private sector initiatives. As discussed above, the competition among the three cellular license holders provides a valuable opportunity for accelerating availability of telecommunications services in these sectors, to the extent that their business strategies overlap with COMPETE's interest in how ICT can support competitiveness in the three sectors. Moreover, we will seek to create linkages among the strategies of different private sector stakeholders where they overlap or are synergistic (processors, producer associations, ICT companies, etc.). This approach will ensure that efforts are market driven and sustainable. Thus, COMPETE's role will be to provide a strategic framework, identify opportunities for cluster collaboration, design pilots, facilitate negotiation of relationships and roles, serve as a coordinator of implementation that is led by private sector players or groups of players, and track and evaluate results. Since pilots will be designed to be market driven and private sector led, if they are successful, it is assumed that rollout will be supported by the interested private sector partners.

B. PROPOSED PILOT ACTIVITIES

The discussion above derives from interviews, input, and research from stakeholders in all three sectors, ICT companies, associations, micro finance institutions, USAID, and other donors in Uganda. Based on that framework, several proposed pilots have been identified and are under development. We anticipate that these and other concepts will be reviewed and discussed by the stakeholder workings groups in conjunction with ICT sector participants (which has not occurred to date). The proposed parameters for identifying potential pilots are that they:

- Directly support the working group action plans
- Create or support quality incentives
- Are market driven and have a clear private sector “champion” to drive implementation
- Build on and/or link existing initiatives
- Increase the availability of value adding low-cost ICT in rural areas
- Leverage the benefits of the Internet to promote direct linkages with buyers
- Leverage existing local ICT capability.

Based on these criteria, COMPETE has identified two specific opportunities that will be pursued under the project:

- A pilot project to test the delivery of marketing information through cellular Short Messaging Service technology; and
- Supporting quality control and accountability down to the primary producer level through application of barcode technology with an Internet interface that links producers directly to buyers and end users.

B.1 Wireless Market Information System (WMIS)

Background. A recent ICT assessment conducted by CARANA Corporation for USAID/Uganda found that Uganda's telecommunications infrastructure and income-generating capacity is generally inadequate to support advanced ICT applications in most areas outside of Kampala.¹⁰ Moreover, small holders' access to and ability to make use of Internet in the COMPETE sectors is low. At the same time, evidence suggests that great potential exists for the introduction of cost-effective, easy-to-operate mobile telephone technologies in the agricultural and fisheries sectors. In particular, cellular-based Short Messaging Service (SMS) can enable small-scale producers/fisher folk and local business associations to increase their access to real-time market information. Consequently, several mobile service providers, in partnership with micro-finance institutions, have experimented with strategies for delivering and financing equipment and services to rural communities. Since demand for voice services is so high, the result was accelerated repayment of the micro-loans due to the ability of the community organizations to earn revenue from re-selling the service. These organizations have gained a source of revenue while providing members access to telecommunications services.

At the same time, there appears to be a high demand by small producers/fisher folk and local associations for affordable market information access, especially price information. While radio will continue to be the most effective delivery mechanism to reach the widest possible audience in Uganda, WMIS provides two-way communications that can allow users to obtain the exact information they need, when they need it, and moreover, the ability to share that information among local community and beyond. Looked at in another way, if word-of-mouth is the most effective form of communication at the local level, cell phones simply build on the way people already do things, while speeding and expanding the dissemination of information.

Concept. WMIS, therefore, builds on the existing demand for price and market information in the sectors, and current competition among mobile service providers to gain new subscribers, which is encouraging them to develop innovative and low cost services to market to rural areas. The concept is that the cell phone companies provide the *delivery mechanism* while sector associations (through COMPETE)

¹⁰ CARANA Corporation, "ICT Developments in Uganda and Their Implications for USAID Programming: Assessment Report," prepared for USAID/Uganda, May 3, 2001.

provide the *content* and micro finance organizations provide *financing* to end user groups, be they landing site organizations, nucleus farms, or farm associations. By delivering price information through cell phone SMS, we can meet demand for affordable access to market information, while increasing demand for the cell phones and creating sustainable revenue streams for potential micro finance borrowers. It is this mutual interest that provides the basis for cooperation with the private sector to meet project objectives to accelerate access to affordable telecommunications services and relevant content in the sectors while increasing familiarity and skills in new technologies.

The direct result of WMIS will be: producers/fisher folk have greater access to real time market information; more people have access to cell phones in the sectors. If successful, it is anticipated that this system will have some of following collateral benefits:

- Producers can make better decisions about where to sell, based on knowledge of where the best prices are being paid in their areas.
- The relationship between offering better quality and getting better prices is reinforced, which provides the incentive to producers to implement better practices.
- Producers organizations or landing site associations can better organize and share information at the local level and have a source of fee-based income re-selling phone time.
- Increases communications capability within the sectors, among producers, processors, exporters and even external buyers.
- Allow producers to participate in call in radio shows.
- Individuals or associations with mobile access can use the future income stream from re-selling access as collateral for obtaining credit.
- Processors have the ability to reach producers with specifications and quality requirements for which they are willing to offer premium prices (e.g., a fish processor has received an order for 8-inch fillets of Nile perch and can instantly call suppliers who are out on the lake to let them know what he needs).
- National level associations and research agencies have a wider network and efficient mechanisms for collecting real-time market information.
- Provides an incentive for farmers to organize into “blocks” or other cooperative groupings to access telecommunications services, micro finance and market information, which will help them to address quality and access premium markets.

Assumptions. The key assumptions underlying this concept are currently based on feedback from the sector working groups and from the mobile service providers.

- Telecommunications companies have an interest in extending their services to gain market share in rural areas.
- Small holders and fisher folk value market information and willing to pay for access to affordable, relevant and timely information and communications services.
- Micro finance organizations see an opportunity to expand to new markets.

B.2Barcode/Quality Seal Concept

Background. Based on discussions with coffee and fisheries stakeholders, there was strong interest in developing an e-commerce initiative associated with a quality control program. Several model exist (bananas in Dominica and coffee in Peru, see the following websites: www.perucoffee.com and www.dbmc-dm.com/), we discussed the possibilities for using ICT applications to support the quality control process, using Internet to provide accountability and verification of quality, while linking producers directly to buyers and to end users. The Sustainable Tree Crops Project is considering an activity along these lines, and COMPETE will endeavor to leverage its activities in coordination with STCP.

Concept. To support a quality control program, the information aggregation and public accountability of the Internet provide a valuable tool for enforcement and verification, while also providing a virtual link between the small producer and the end user. Using a barcode to identify each producer that complies with quality standards (for example, in order to participate in an auction producers or groups of producers can be certified and given a barcode number), allows information about the producer to be electronically aggregated in a database that can be accessed through an Internet interface. This provides accountability for the producer and verification capability to the buyer that producers are in compliance. The information about quality and producers reinforces an emerging image for the product, not only for quality, but also for distinctive Ugandan quality.

The basic elements of the approach include:

1. **Buyer:** A major buyer, such as a wholesaler or supermarket chain or on-line auction site, has a set of standards and specifications they use to evaluate products for quality and environmental friendliness. The buyer agrees to pay a premium for products that meet its exact specifications. (In Dominica, Tesco pays a 40% premium to banana producers who meet their specifications, which include rigorous environmental standards.) The premium provides the incentive for quality to be addressed all along the supply chain, but this model brings the incentive all the way down to the producer level where initial quality control is most critical. Environmental concerns can also be addressed. In Uganda, for example, in the fisheries sector, the compliance matrix would include net size to ensure that participants use regulation nets. If they use 1-inch nets fishers will be out of compliance and will not be eligible to participate in the premium program.

2. **Producers or groups of producers:** Producers or groups of producers require assistance in meeting the standards and specifications of the buyer. The large number of smallholders will require an approach involving organizing farmers to be certified as a group. Most likely, we would need to work through local producer associations, landing site associations, collectors, or nucleus farms. By working to meet the specifications and standards set by the buyer, producers become more familiar with the factors that influence a buyer's decision.
3. **Certification, monitoring and reporting system.** Based on the specifications of the buyer, a checklist of items is developed that each with which each producer group must comply in order to be certified. Extension officers or local producer associations must be trained to certify, monitor and report compliance. Participants complying with all the requirements are certified and assigned an identification number that will be used on barcodes identifying product origin.
4. **Technology platform.** The technology element of this model provides the electronic support infrastructure. The most critical element, of course, is the achievement of real quality, based on defined standards, that is awarded with premiums. The ICT component provides the enforcement and verification tool that gives credibility to the quality control program that justifies the premiums paid by the buyer. The technology components include:

Barcode: The barcode number includes all the necessary identification data for each farmer/group of farmers, including their certification number. Each bag of coffee beans or box of fish fillets, for example, would be labeled with the barcode identifying the source of the product, date, etc. The barcode is the pivotal element of this model, because it provides the electronic data that:

- Links any buyer or consumer back to the individual producer group. This accountability provides an incentive for farmer groups to remain in compliance and provides the link that gives them more information about the quality requirements of the end user.
- Protects the producer who has addressed quality from poor quality practices downstream, because the certification number on the barcode provides the verification that quality was not compromised at the production level.
- Allows the buyer to quickly identify those producers who consistently deliver quality and to target them for future purchases and changing specifications to meet new customer needs.

Geographic Information System (GIS): Electronic maps provide geographic and environmental data, allowing the users to “click” down to the plot or fish cage level for producer information. This would allow buyers and sector stakeholders to monitor environmental issues and identify changes that may

occur related to changes in producer practices. GIS mapping in Uganda has been done under the water hyacinth project and FUSENET among others.]

Management Information System (MIS): Relational database consolidating information about each group of farmers and/or individual farmers, including [maps], barcode, social and demographic information about farm families or communities.

Internet website: User-friendly interface for buyers and consumers that integrates all the above elements and provides the buyer with a mechanism for monitoring compliance. It is also the source of information that can be used for marketing by the buyer. For example, information about the producer communities can be used by grocery chains for product promotions.

5. **Marketing:** A “quality seal” or related concept can be developed to represent the unique and distinguishing aspects of the Ugandan product(s), backed by the data gathered and made available through the website. In many western markets, origination information about the producers of a particular product provide a powerful marketing tool for retailers.

Many of the above-defined elements exist in Uganda. COMPETE will seek to play a role in coordinating and bringing together related initiatives to support an e-commerce-based quality program.