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Creation and Dissemination of Agricultural Knowledge in Nigeria Using Broadband Technology [Slides]

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Purpose

- **The study is an experimental study to examine the effects of using broadband Internet technology for creating and disseminating agricultural knowledge in Nigeria.**
- **A free broadband service Knowledge Center was established in the village of Ihiala with volunteer college students aiding the farmers in using the Internet.**

Significance of the study

- **As Melkote and Steeves (2001) suggest, communication for development must start where the problems and needs exist.**
- **In emerging markets such as Nigeria in Africa, it is the rural area that should be the target for the transmission of knowledge for the social good because it constitutes the bulk of the population and agriculture is the main industry in this locale .**

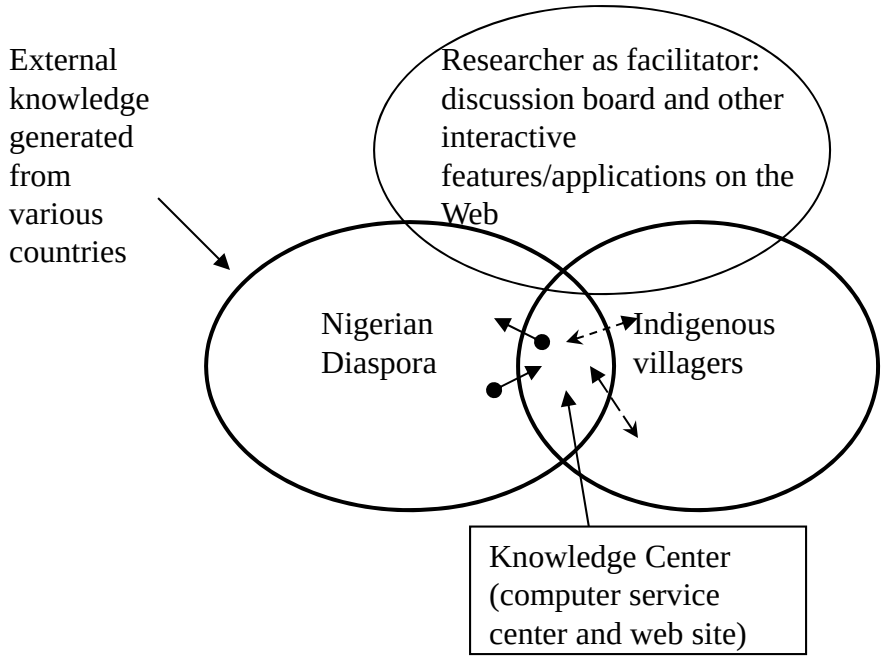
- Our study integrates theories in development communication and knowledge management and applies them in a field study in Nigeria, the African country with the largest population.
- The study is an innovative attempt to utilize Nigeria Diaspora resources in collaboration with the local communities and university partners to generate and share knowledge that meet the needs of the local people.

Theoretical Framework

- In facilitating knowledge creation and transmission, the study employs Nonaka's (1994) four modes of knowledge creation:
- 1) socialization that transmits tacit knowledge to tacit knowledge held among villagers,
- 2) combination that organizes different sources of codified knowledge into a new knowledge,

- 3) externalization that encourages Nigerian Diasporas and indigenous villagers to post their knowledge on the web site,
- 4) internalization that creates knowledge through a process of learning by doing, applying the knowledge in real life practices.

Figure 1
The collaborative knowledge creation and transmission model



Research Questions

1. How will farmers use the broadband Internet access and computers available to them?
2. Will the proposed collaborative model of knowledge creation and transmission be effective in the Ihiala village of Nigeria, Africa, by increasing communication among the farmers on the topics selected and improving the agricultural knowledge of the villagers?

Method

- In this study, we employed the Participatory Action Research (PAR) method (Friesen, 1999) to facilitate and demonstrate how knowledge can be created and transmitted effectively in rural areas in Nigeria.
- The knowledge that PAR attempts to generate is specific, non-Western and local to the recipients of the knowledge.

Method (continuation)

- Due to the limited amount of funding available in this study and exploratory nature of this project, we chose to conduct a pilot study in the town of Ihiala inhabited by mostly Igbos, one of the largest tribes in Nigeria.
- Our African collaborator and his research team conducted face-to-face interviews with local village farmers on specific areas of agricultural knowledge that are of greatest need to them,

Method (continuation)

- Unlike a library, this knowledge center, named “SI_May Knowledge Center"
- was positioned as a social hot spot for people to exchange ideas, obtain information, and assistance from one another.
- To assess the knowledge needs and the knowledge levels of the farmers, the African collaborator and research assistants administered personal interviews to a panel of 12 women farmers in two waves.

- The initial contributors to the knowledge center came from the Nigeria Diaspora Database and the researchers.
- The local farmers were asked to post their lessons, comments and ratings from the knowledge learned from the knowledge center on the knowledge center web site using interactive Internet features such as discussion boards and ratings of the posted topics at the http://www.nigeriaknowledgecenter.net.

- A call to contribute to the knowledge center was sent to the various 24 Nigeria Diaspora network sources or organizations which carried the call for contribution in their newsletters, 26 Nigerian individuals resided in the United States and six US experts in African agriculture.

These Diasporas were chosen as primary contributors for the several reasons:

1. They come from Nigeria and know the country well enough to help identify areas most needed knowledge.
2. They are tied to Nigeria and work for the best interest of the country
3. They have access to knowledge outside Nigeria which is very valuable to local people
4. They serve as mobilizing agent that coordinate knowledge from different areas

- About three months after the knowledge center was opened, another round of personal interviews was administered to the same 12 women farmers on their improvement in knowledge areas, their utilization of the center's resources, and participation in contributing their knowledge to the knowledge center.
- In addition, another 97 randomly selected farmers in the village were interviewed on their awareness, use, and assessment of the knowledge center.

Findings

Most important problems to female farmers in Nigeria

- The problems that the female farmers mentioned as the most important to them in the 1st wave and 2nd wave were consistent: lack of fertilizers, pest control, seedling, lack of funding and water problems.

General working conditions and farmers' profile

- In terms of infrastructure availability, 85% have motorable roads, about 90% of them have health care facilities, water, electricity, and 95% have schools. Yet they are quite dissatisfied with the condition of the infrastructure.
- Unemployment and inadequate income were most commonly mentioned (48% each) as the constraints to women empowerment.
- The farmers are working with little support.

Information sources used by farmers

- To tap the use of information sources by farmers, we asked them where they get information about the types of seedling to plant on their farmers and where they get information on improved method of farming.

Response

- Mass media such as radio and television (68% seedling, 66% improved farming method) is the most frequently mentioned source
- Other fellow farmers (61% seedling, 51% improved farming method) and Church (42% seedling, 35% improved farming method) are other frequently mentioned sources, indicating the importance of interpersonal interaction in the knowledge dissemination process.

How the Farmers Used the Knowledge Center

- About 30% of the farmers we interviewed had visited the Knowledge Center during its 3 months of operation
- Among those who visited the Knowledge Center, 61% found the Nigeria Knowledge Center Web site which contains customized topics and discussion boards useful.

Table 1 Usage of the Knowledge Center

Use the Knowledge Center web site	41.9%
Visit other web pages	22.2%
Send e-mails	25.9%
Meet and talk with fellow farmers	37.0%
Learn how to use computers	40.7%
Use computers to do other work	14.8%
Other uses	18.5%

Explanation of Table 1

- All of those who visited the Knowledge Center said it was a great place to socialize with and learn from other farmers.
- found the information on the web site useful for their farming and encouraged their friends and relatives to use it.
- said they would miss it if the center was discontinued. It is apparent that a core loyal group of users was formed during this short period.
- like the provision of information by the center and that experimenting with computers is also a fun experience for them.

Effectiveness of the Collaborative Model of Knowledge Creation and Dissemination

The collaborative model of knowledge dissemination is only partially effective among the farmers and not to the Diasporas in knowledge creation.

Hence, the Nonaka's (1994) model was partially fulfilled in that we have socialization that transmits tacit knowledge to tacit knowledge held among villagers, and villagers combine and organize different sources of codified knowledge into a new knowledge

Discussion and Conclusion

- Nigeria has the fastest growing ICT market in Africa and teledensity rose to 3.92%, exceeding the minimum level recommended by the International Telecommunications Union (Dada, 2007),
- Our pilot study shows that once the technology is available, the farmers will take advantage of it and they are interested in computers

- Nigeria government has several initiatives to facilitate affordable access for Nigerians including the Universal Service Provision Fund to support provision of wireless broadband services in Nigeria cities, and a deployment of 2000 VSATs across Nigeria (Dada, 2007)
- The Nigerian government has been infamous of its lack of coordination in government agencies and poor management of resources.
- Hence even if technology is available, a sound policy and effective implementation program must be in place to utilize the technology

- The low participation of Nigerian Diasporas in contributing to the knowledge center posting is a disappointment to the researchers.
- Another reason may be the subject of agriculture does not appeal to many overseas Nigerians who are working in other professional fields
- The center as a research project and a non-authoritative entity may also lack credibility to the Diasporas

Limitations of the Study

- **First, due to the limited funding and the high cost of installing and running VSAT broadband service, the service of the center is only available for three months**
- **Only short term effect of the center can be measured.**

Conclusion

The activities of the farmers in the center show that the participatory community action approach can be effective in a high-technology setting.

The request by the farmers that more knowledge centers be built shows the interest of the farmers in the service.

The many different uses of the center show that the concept of a knowledge center equipped with technology for knowledge acquisition can be successful in an emerging market and in rural communities.

- **Another problem we encountered in the study is the frequent electricity outage and occasional breakdown of the computers causing irregular service of center**
- **Finally , the sample size of the panel for pre-test and post test is only 8 farmers, making the analysis of the center's effect on users' knowledge preliminary rather than conclusive.**

Suggestion for Future Research

- Future research should track the farmers for a longer time period and asked for a report of agricultural practices
- a comparison should be made between those who used the broadband technology and those who did not
- Cooperation with other non-governmental agencies can add resources to technology-based knowledge creation and dissemination.