

Agriculture's response to global food crisis

The author suggests how the current online knowledge sharing CoPs can move from computers to mobile phones which are now increasingly becoming as fast as computers and at the same time being more ubiquitous and cost-effective



*Dr Alexander G Flor
Professor and Dean
Faculty of Information and Communication Studies
University of the Philippines (Open University)
aflor@upou.edu.ph*

Introduction

Planning experts and economists have warned that the world is about to be confronted with a global food crisis unlike anything it has encountered before. Unbridled population increase combined with longer life expectancies, land conversion, biofuel production and a shrinking agriculture sector exacerbated by rising oil prices and climate change may lead to food shortages and spiraling food prices at a global scale. Within this milieu, e-Agriculture and its emphasis on information and communication technologies and applications in the agricultural sector have been perceived as irrelevant. Not many are aware that the answer to the impending global food crisis may be found in e-Agriculture.

Indeed, one may argue that e-Agriculture has very little to do with the factors that are causing the surge in food prices that experts from the Food and Agriculture Organization (FAO) and the International Fund for Agricultural Development (IFAD) have identified:

- Poor harvests in major producing countries linked to extreme weather events
- Decline of food stocks, which are at the lowest level since the 1970s
- High oil and energy prices raising the cost of inputs like fertilizers and irrigation as well as the cost of transport of inputs and produce
- Lack of investment in the agricultural sector
- Subsidised production of bio-fuels that substitute food production
- Speculative transactions that hedge futures markets
- Imposition of export restrictions leading to hoarding and panic buying.

And yet if we examine these factors, most

of them may be addressed by information and communication. We live in a global information society characterised by information-based economies where information is the primary commodity and the critical resource. It is axiomatic that an impending global food crisis can be solved by information.

This crisis is a product of social entropy or societal breakdown. Cybernetics and general systems theory teaches us that entropy can be negated by information. It is therefore through the process of information exchange that the world may find its salvation. However, these may seem as empty theoretical constructs to a person with an empty stomach.

eAdvocacy

The G8 2008 Hokkaido Conference underscored the importance of access to and dissemination of agricultural technology information in addressing the food crisis. However, we espouse a more proactive response that goes beyond access provision and dissemination for Asia's e-Agriculture community to address the global food crisis.

The e-Agriculture community employs Communities of Practice (CoPs) to generate solutions to agricultural problems. Traditionally, Communities of Practice engage in information exchange, what has been quoted often enough as "the sharing and reuse of information." This approach is patterned after the corporate KM Model of Davenport et al (1995). Unfortunately, it ends there. The failure of this approach when applied to large-scale societal crisis stems from the fact that it stops short from mobilising sectors and does not go beyond information and knowledge sharing. There are, of course, exceptions within the e-Agriculture community such as Solutions Exchange India, but by and large, CoPs



Everything seems possible now.

Being a science teacher at a government school in Jalandhar, it was always disappointing to see a majority of students not opting for the science stream after the 10th standard. Having spent nearly two decades teaching science, I often wondered what I could do to inculcate a passion for the subject among students.

The solution wasn't far away. In Microsoft's Project Shiksha sessions, I discovered how effectively computers can be used in teaching. My mind was flooded with ideas. I organised engaging classroom sessions, conducted various science and math quizzes, and saw that students were slowly using computers to explore and make their reports better with relevant information and logic.

Our school was adjudged the best in 'IT Practices & Computer Literacy' in the district. And yes, many more of my students started opting for the science stream at the +2 level. Technology has truly made it possible. And made me feel proud!

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should live up to its name by engaging in practice. CoPs should disseminate information to correct unsound policies (e.g., land conversion), uninformed decisions (e.g., biofuel production), unwarranted practices (e.g., using staples as animal feed), and inaccurate predictions and forecasts, all of which are part of the entropy that is causing spiraling food prices and artificial food shortages. In other words, CoPs should engage in advocacy.

Bringing CoPs to the next level: Communities of Champions (CoCs)

We should note that the CoP concept was a progression from the CoIs or Communities of Interest that characterised the early Internet workgroups that essentially shared notes, information and insights on common areas of interest, beginning with CERN physics and Internet protocols. When CoIs began solving common problems, this brought the workgroup concept to the next level, the CoP. However, many of today's CoPs offer solutions to problems but stop short of implementing these solutions, preferring to adopt the KM business protocol of sharing and reuse.

The problems that confront e-Agriculture nowadays are to a scale that often requires policy interventions, not technological solutions. We have fully dealt out the technological card by engaging into GMO research and precision agriculture. CoPs must now delve into the policy process and progress into Communities of Champions or CoCs. Thus, from CoIs that share information and CoPs that share solutions, e-Agriculture must move into CoCs that mobilize sectors through information, knowledge and advocacy.

The four alternative Fs

A potential advocacy theme for e-Agriculture CoCs would be the four Alternative Fs: alternative fuels; alternative fertilizers; alternative feeds; and alternative foods. Under alternative fuels, CoCs should push jathropa as a source of biofuels instead of corn, sugarcane, palm oil and coconut oil. Under alternative fertilizers, the organic initiative should be resurrected against petroleum-based fertilizers. Under alternative feeds, CoCs should prod animal nutritionists to consider alternatives to corn and soybean as feed for livestock and poultry considering it takes a hundred kilos of soybeans to produce one kilo of beef. Under alternative foods, upland families in Kalimantan, Indonesia sell 10 kilos

of their sweet potato to get enough money to buy one kilo of rice. CoCs should push sweet potato, cassava and soybeans as alternative staples.

Most of all, the advocacies of e-Agriculture CoCs must involve the participation of mobile communities at the grassroots level.

Mobile communities

Fearless forecasts: In the 2008 IAALD Conference held in Atsugi, Japan, the e-Agriculture keynote panel, which included this writer, made seven forecasts on the future of e-Agriculture, all revolving around mobile telephony:

1. Mobile phones will make telecentres or community eCentres redundant and the OLPC initiative irrelevant
2. Mobile service providers will or are already solving the first mile/last mile linkage challenge
3. Mobile phone users in agricultural communities will or have already reached a critical mass
4. Mobile phone functionalities will lead to collaboration and networking and will render intermediaries unnecessary
5. Mobile phone content will efficiently address issues such as the language medium, auto-translations, relevance and the lack of local knowledge.
6. Mobile phone handsets will make ICT services affordable to agricultural communities
7. Mobile phone applications will provide the e-Agriculture community with an effective Web2.0 platform.

Web2.0 has revolutionised how people think of the World Wide Web from a collection of individually owned static websites with published content into a body of collectively owned dynamic websites with user generated content. The 3G mobile phone, in general, and the iPhone 3G, in particular, a most disruptive tool, has given e-Agriculture, the much needed platform for Web2.0.

A lot of these have to do with the mobile phone itself. Mobile phones are no longer phones but are mobile workstations, and more. As early as 2005, Nokia began fining employees in Finland who referred to the Nokia 9300 as a phone, not as a computer.

The five Cs

For the past decade, we in the e-Agriculture sub sector have been confronted by the following challenges, the Five Cs:

- **Carriage:** There are no first-mile/last-mile linkages.
- **Critical Mass:** ICT use in the rural areas has not reached the numbers required to make an impact on agriculture productivity and poverty alleviation.
- **Collaboration:** Intermediaries only make partnerships and collaboration possible. Generally, farmers, housewives and rural youth do not use ICTs without the intervention of line agencies that provide basic services. This is otherwise known as Calvano's Missing Link hypothesis
- **Content:** There is a lack of local content. There cannot be a universally accepted medium.
- **Cost:** Rural communities cannot afford ICT hardware and services

Carriage: In one sweep, Apple's iPhone has potentially addressed all of these problems. With the current infrastructure of cellular sites in agricultural countries, the mobile phone has solved the first mile/last mile challenge. Even the need for telecentres,

Microsoft



I had a dream.

My first job was with a factory making bindis. Little did I know, that there was something else out there that would take me much further. That would allow me to nurture my dream and bring it to life.

An NGO supported by Microsoft under Project Jyoti, opened up its doors for me. I was given the opportunity to learn computers under Microsoft's Unlimited Potential IT training program. I knew technology would eventually do wonders for the dream I had kept safe with me for so long.

My instinct was right. My learning took me places. I got a job with a leading financial services company as a Customer Care Executive. This experience gave me tremendous confidence. I worked hard and got promoted. My dream felt real now. Today, I run my own insurance agency and employ two people. We use computers to manage our business and it has increased our productivity. I am thankful to Microsoft for having helped me discover the fact that I can achieve a lot more. And that I can carry on dreaming.

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agricultural ATMs or kiosks has vanished. The OLPC has likewise been made redundant. Consider a household with an iPhone. The husband would regard it as a source of information. The wife would consider it as a medium of communication. The college student would use it as a mobile library. The adolescent sees it as an iPod wherein audio and video podcasts may be downloaded and played back. The youngest in the household would regard it as a PSP or a Playstation Portable.

A professional can use the iPhone as a handheld Mac or a mobile office. A field worker can employ it as a documentation tool capturing images and audio. The iPhone can produce user-generated, local content from documents to rich media that may be shared and reused among farming communities. It can certainly do more than what a telecentre can do.

It is not the intention of this paper to promote an Apple product. As a matter of fact, if Apple does not play its cards right and continues to disenfranchise those in the lower economic brackets then in a few years we might just find ourselves with perfectly operational iPhone clones running on open access/open source software.

Critical Mass: In the Philippines, cellular phone ownership achieved a critical mass in 1998 with the advent of 2G or GSM technology. The exchange of text messages translated into a mutually reinforcing behavior among social networks. Now, almost everybody owns a mobile phone. The only exceptions are the very young, the very old and the very poor.

Ownership transcends across economic classes (except for the very poor), gender, age and sector. Latest figures reveal that four hundred million SMS messages are sent and received in the Philippines everyday. That translates to ten million dollars a day spent on SMS alone, excluding voice calls, GPRS and 3G services.



Collaboration: The mobile phone prompts the farmer, housewife and rural youth to collaborate, to share and reuse, to exchange information. Zazueta (2008) observes even residential students prefer online learning if they had a choice. 45 percent cost reduction with no significant difference in learning. Apple's MobileMe social networking platform costs US\$99 per year.

Content: Given the current mobile phone ownership in rural and remote areas of agricultural countries such as the Philippines, Thailand, Cambodia, Malawi, and Lao PDR, iPhone has the potential of bringing local content up on the Web, in audio/video. As Metcalf argues, video is the next big thing in the Internet. This makes the issue of a universally accepted medium, moot and academic. Web communities will use their language of choice effectively through video. With current incentives for developers, we might find a complete suite of e-Agriculture applications for the iPhone within the next three years.

Cost: As to cost, the iPhone retails at 200 US dollars and one can purchase a prepaid card for as low as US\$1. Technology is getting better, cheaper, faster and smaller.

The bulky Motorola bricks that were introduced as cellular handsets retailed at US\$4000 in the early eighties. Signing up for a connection entailed another US\$4000. Compare the Motorola brick with your mobile phone today. It is obvious that technology is getting better and cheaper by the day.

Conclusion

With the aforementioned argument, it appears that the future of e-Agriculture lies in eAdvocacy, mobile devices and online mobile communities. With this in mind, we would be better equipped to face the global food crisis. ■

NABARD to help hold rural *haats*

The National Bank for Agriculture and Rural Development (NABARD) is planning to expand its scope as development bank. In order to promote self employment and to boost industrialisation in rural areas of Orissa, NABARD will extend its assistance in setting up '*haats*' or rural weekly markets.

The bank will provide a financial assistance of upto INR 5 lakh for development of infrastructure facilities at

rural *haats*. In the first phase of the project, NABARD will assist five *gram panchayats* in each of the 314 blocks in the in the state. According to M K Mudgal, Regional Officer of NABARD, two such projects have already been sanctioned in Koraput district. The bank will also fund the setting up of markets to sell local agricultural products like flowers.