Agricultural Cooperatives and Information Communication Technology in an Emerging Asia

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Abstract

Technology is playing an increased role in agricultural cooperatives which exist in almost all the countries in Asia and enjoy legal recognition. The interfaces between the Internet and telecommunications have escalated the amount of information available to cooperatives and their members. Nonetheless, their capacity to access and manage the data, information and knowledge differs from the level of information systems available and critical State support. ICT applications from business to consumer have enabled cooperatives to identify products and marketing opportunities in the context of WTO implications. Asia has both very successful and those in dire trouble agricultural cooperatives. However, there is a lot of knowledge sharing in the movement and this has helped tear down barriers between and among cooperatives. Many cooperatives which have their own customized systems, standard procedures and particular innovation have brought to life a wide range of good practices in agricultural cooperatives. Information communication technologies (ICTs) afford opportunities for a knowledge management system that proved sustainable for agricultural cooperatives.

The world has 800 million cooperatives members and this paper highlights a number of successful agricultural cooperatives. In general, the cooperative sector in Japan has 30 million members; India with 236 million; South Korea, 5 million farmers, Thailand has 6 million members; Philippines, 5.6 million and Malaysia, 5.5 million. These countries have all added new sophistication in terms of a global projection for agricultural cooperatives because of communication technology.

Keywords: agricultural cooperatives, pro-poor rural growth, social economic enterprises, e-commerce and business to business.

Introduction

The emergence of information communication technologies appears to change the nature of agricultural cooperatives and their impact on people and nation-states. There are several core assumptions behind cooperatives: voluntary and open membership, democratic member control, member economic participation, autonomy and independence, education training and information, cooperation among cooperatives and concern for the community. Neither part of the public or private for profit sectors, the network of cooperatives together represents social economic enterprises that are accountable to those they are meant to serve.

The major purpose for establishing agricultural cooperatives was to free the poor and the indebted farmers from the clutches of the traditional moneylenders who provided credit at exorbitant interest rates. As the process of delivery in their products and services become more complex, a number of agricultural cooperatives, apart from their continuing adherence to the organizing principles of their movement, have leveraged their home markets into the global arena. The strategy consisted of an enabling environment with the critical support of the State, building human resources and developing ICT applications. ICT enabled environments allowed for more public-private partnership that have resulted in productivity growth, raised the incomes of small scale farmers and created jobs in related industries such as processing and marketing.

Breaking free from rural poverty means recognizing the threats and opportunities that globalization brings with it. The highly sophisticated supply chains and top management with a deeply cosmopolitan mindset of multinational corporations are characterized as vertical where top down communication dominates. Strategic alliances require capabilities from the ground up that can be shaped to favor modes of governance and institutions that favor the poor. The socially constructed nature of agriculture cooperatives offers real advantage by ensuring a pro-poor character in rural growth and development. The WTO statistics show that agriculture accounts for over one third of export earnings for almost 50 percent in developing countries (The World Bank Group 2007).
There is a regional ICT dimension to the agricultural cooperatives in Asia. Specifically, Japan and South Korea have paved the way. This paper is about examples of economic success and efficiency based on local responsiveness and transfer of learning facilitated by ICT to bring about an overall productivity in the agricultural sector.

The National Federation of Agricultural Cooperative Associations in Japan

There are 30 million members of cooperatives in Japan. Specifically, 91 percent of farmers are members of agricultural cooperatives with total revenue of US$ 54 billion in 2004 (Liebrand 2007, 3). Zen-Noh, the National Federation of Agricultural Cooperative Associations, is the country’s peak center on agricultural cooperatives, one of the largest in the world. Most of the 3 million farm households in Japan belong to Zen-Noh’s 1,010 primary level coops. In cooperation with prefectural federations and primary level coops, Zen-Noh serves its member farmers by purchasing and distributing the materials and equipment for agricultural production and necessities for daily farm life. The on-line communities center on shared life experience on better living in terms supporting and sustaining a safe and healthy life, safeguarding the living environment, and ensuring quality of life.

The Federation is a vast apparatus, which was organized as the Central Union of Agriculture Cooperatives in 1947, at the time of the land reform. In the 1980s, there were local branches in every rural village where constituent local agricultural cooperatives included practically all of the population for which farming was the principal occupation. Japan is self reliant in rice because of the agricultural cooperatives. However, the sector continues to be at odds with business sector pursuing market liberalization and lower food prices (Richardson 2005, 1).

In general, the cooperative sector is strong in agriculture and related industries and are also engaged in retail distribution of food, medical care, insurance, housing and financial industry. One type of major investment is in credit unions. A major affiliate is Zeh-Noh Information service that handles computerized calculation and paperwork on consignment and system development.

Another important feature of the cooperative sector is its concentration in universities. The National Federation of University cooperative Association has 1.4 million members.
( NFUCA 2003). The Federation represents 224 member cooperatives and its businesses include general stores, travel services, book stores, canteen services, information hardware and student mutual benefits provision. Affiliated with the Federation of Agricultural Cooperatives, the University Cooperatives buy in bulk the rice and other foods. At the same time, catalogs are published every semester. The capital comes from contributions of the undergraduates, the graduate students and faculty members studying and working at their universities. The University Cooperatives operate a point of sale system and ICT based tools that are central to the vision of creating a campus with many learnings through a positive role in the community and in the promotion of consumers’ rights.

**The National Agriculture Cooperative Federation**

There are over 2 million farmers (90 percent of all farmers) who are members of agricultural cooperatives with a reported revenue of US $ 6 billion (NACF 2006). The cooperative model in South Korea highlights the importance of the relationship between the State and the cooperatives. For example, while South Korea’s Ministry of Agriculture, Forestry and Fisheries has overall authority for food grain and other price support program, the National Agriculture Cooperative Federation (NACF) serves as the conduit of the state’s assistance to the farmers, administers price support and is responsible for distributing production inputs, including fertilizers and farm machinery. The NACF supplies farm credit, conducts research and sells various subsidized agricultural inputs as well as provides guidance to farmers.

The organizational processes of the NACF are highly integrated and supported by the strategic use of modern information technology. Key driving forces of change includes networks driven by a diverse public with more choices for better quality services. In the early 1960s, State–agricultural cooperative partnership has brought in change management in a poor agrarian economy to a highly industrialized economy. Social norms and practices allowed for a high price policy for rice presumably ensure food security for a major crop. Prompted by State policies, the National Agricultural Federation is a consequence of a merger of 15 agricultural cooperatives in 1961. It has been observed that the 1960s can be viewed as a period of formation and consolidation of the organizational basis, the first half of the 1970s as the period of
expansion of the organizational basis and the latter part of the 1970s as the period of strengthening cooperative business and the 1980s can be viewed as the period of take off. Business success and organizational prosperity enhanced agricultural competitiveness and in the 1980s, primary agricultural cooperatives became branch offices of the Federation. The expansion of business operations were made possible through computerization. In the process, a corporate identity program was established and services to the farmers were much improved. At the same time, the business plans of primary cooperatives are subject to the representatives meeting for full deliberation and finalization after reflecting on the opinion of member farmers. Major decisions concerning the implementation of new businesses are made by the board of directors selected from among the cooperative members. In addition, the representatives meeting rarely fail to forward a set of recommendations to the state calling for governmental attention on pending issues. Agricultural cooperatives have made substantial strides in building up an operational system based on the opinions of farmers.

Both the National Agricultural and the Livestock Cooperative Federations are key partners of the NACF in streamlining business processes of the movement. The NACF acts as the financial and logistical center for the myriads of activities required by the business of farmers and coordinate consuming activities of farm households. Its diverse functions cover consumer insurance and marketing, the supply of farm inputs and assists in the operation of chain stores which have been rated in terms of the supply of quality goods in a cheap price and price stabilization of commodities in the rural areas. The NACF leads contract negotiation with manufacturers for factory price and communicate to member cooperatives the result of such transactions.

NACF has been implementing e-banking transaction to optimize customer service. It has also initiated the concept of a New farming Village to promote innovation in agriculture. The campaign is to explore new products, new services or new markets. Through the one company, one village partnership, NACF addresses a fast changing environment and taking great effort to secure food and health of all Koreans and influencing the way of thinking and strategy in making farming villages more competitive as well as playing an active role in sustaining an ecological friendly environment.
With over 1,777 member cooperatives and over 10,000 business centers, the credit and banking business of NACF is worth US $ 150 billion (NACF 2006).

**National Cooperative Union of India**

India has 230 million cooperative members (NCUI 2006). The cooperative movement in India is one of the oldest in the region and the largest in the world in terms of membership and cooperative institutions. Starting as a credit movement in 1904, it has now branched off into several specialized sectors such as marketing, international trade, agro processing, fertilizer production and supply, production of heavy machinery, housing, consumers and fisheries. Cooperatives cover 100 percent of villages and 73 percent of rural households (Sood 2003, 7).

The National Cooperative Union (NCUI) serves as the peak aggregation and has its membership open to national and state level cooperative organizations as well as multi state cooperative societies. Presently, membership stands at 194. In the 1990s, the NCUI created a centralized data base. The data base helped cooperative managers in their decision making. With its applications software, NCUI has established the State level cooperative data banks, developed the training modules for ICT and published studies on primary agricultural cooperatives, marketing cooperatives and consumer cooperatives. Furthermore, the information system is a critical part of NCUI’s drive to expand India’s agricultural industry leading position such as in sugar and textile cooperatives in a global economy. Some 59 percent of sugar is produced by cooperatives. The focus on data collection towards market information, networking and ICT connectivity produced a wired village project with sugar cooperatives in the Maharastra State.

The National Cooperative Development Board (NCDB) of NCUI has streamlined data collection to innovate on transaction processes and supply chain integration. A standard software has been designed for all cooperative societies to monitor activities from the lowest to the highest level to make effective fund usage and improve repayments. This has resulted in transparency and establish institutional credibility among members. The information system development has accumulated a series of cooperative profiles that enhanced the distinct meanings of credit and non-credit cooperatives which were used to assist policy makers and planners.
The National Cooperative Development Corporation (NCDC), a State agency, is providing support to agricultural cooperatives. Its objectives include planning and promoting programs in production, processing, marketing, storage, export and import of agricultural produce, industrial goods, livestock and certain other notified commodities and services. Leading the way, the NCDC has funded suitable infrastructure that supports e-commerce and a culture of innovation in marginal agribusiness.

For the past several years, the Indian economy has been experiencing a high growth rate. In 2006, the overall domestic product increased 8 percent with the agriculture and allied sector growing at 3.9 percent. Cooperatives have employed 14.5 million. Agricultural cooperatives have contributed significantly to the dynamism of the economy.

**Bank for Agriculture and Agricultural Cooperatives (BAAC) of Thailand**

The BAAC was founded in 1966 with the primary objective of stimulating agriculture by extending financial services to the agriculture sector (Pagdanganan 2002, 11). It is a State owned bank under the supervision of the Ministry of Finance and is restricted to lending for agriculture related activities. In 2001, the Bank implemented a reduction program on long overdue debts and 89 percent of those with bad debts were able to repay their loan. In 2003, the loan disbursements reached US$ 616 million for agriculture cooperatives reaching 1.6 million farm households (Bayaua 2006, 10). Its extensive network has helped farmer members to open new possibilities in core agricultural business in the rural areas. Its communication standards have resulted in establishing more savings and deposits, sale of consumer and farm supplies, goods, joint marketing and agricultural extension and services.

Being highly decentralized, its field offices have driven both daily operations and organizational strategy representing the Bank’s most important outreach unit. As front liners, the field offices are responsible for farmers training and monitoring. Powerful computers, software and software have helped eliminate layers of management and restructured work flows. On average a credit officer services 400 to 500 farmers, a direct linkage. The Bank’s extensive network in rural areas makes it an efficient organization in providing rural credit. Recently, it bought an application software worth $US 250,000 that aims to provide a powerful tool to help its managers strategize and plan, organize, lead and control from a multi-threat security.
In 2001, the one tambon, one product (OTOP) initiative was launched (a tambon is a group of villages or a sub district) to enable each community to develop and market its own local products based on traditional indigenous expertise and local know-how. OTOP’s value chain highlights support activities that make possible the delivery of rural products with infrastructure, human resources, technology and procurement in place. The State managed such strategic transitions by building domestic and international market outlets. OTOP’s direction is devoted to the development of tourist-related knowledge base delivered through several channels such as the websites. It is observed that the OTOP has successfully channeled income into local communities and helped raise standards of living throughout the country.

**ANGKASA of Malaysia**

In 1973, the Farmers Organization Act and the Farmers Authority Act provided for the transfer of the jurisdiction of agricultural coops from the Cooperative Department to the Department of Farmers Organization (Ahmad 2003, 14). This resulted in the rationalization of farmers’ organizations into an integration between the area farmers association and agricultural cooperatives called the Area Farmers Organization (AFO). At its inception in 1973, the AFO took nearly 1,000 agricultural cooperatives in various stages of growth. The agricultural cooperatives affiliated by area and formed an apex body called ANGKASA at the national level. Significantly impacting on agricultural modernization and rural development in Malaysia, ANGKASA is present in 282 areas with a total membership of 700,000 farmers.

ANGKASA leads in the application of new technologies and improvements in farm practices. It adopted a more modern and commercial approach in the entire farming sector. SOLA is an online system used by member cooperatives to assist in the downloading of cooperative files and processing of information. The system is linked with the computer of the cooperatives to a service bureau database via a wide area network allowing the cooperative to make enquires.

SOLA was developed by ANGKASA. The latter is very effective in improving the quality of marketing, sales, support and procurement process of agricultural cooperatives by delivering more timely and more complete information to the point of decision and
It acts as a local cost channel by introducing reduced administrative cost expedited by electronic forms, less overhead cost, and low variable transaction costs with increasing cost effectiveness as the scale of activity increases. By facilitating the flow of information and linking increased numbers of buyers and sellers, ANGKASA provided opportunities for the greater number of agricultural cooperatives and contributed to transformation in leadership and management.

As of August 2006, some 269 school cooperatives were also assisted by ANGKASA’s information system configuration which analyzed complex accounting procedures, manage membership data and sales. ANGKASA supplied the cooperatives with an integrated software of member database; accounting system, point of sale system as well as appropriate training support services. The system facilitated the preparation of the cooperative monthly and annual financial statement using a computerized system that informs on the difference between the winning and losing a cooperative business. The information improves relationships between leaders and members and raises the quality of cooperative governance.

**B2B of the Philippines**

B2B stands for business to business transactions (Information for Development Program 2003). It provides global opportunities for cooperative businesses by the availability of an adequate infrastructure, the implementation and maintenance of a website, the necessary information technology skills and the ability to understand and measure the benefits that e-commerce can provide. There can be no doubt that B2B is a driver of innovation and plays a vital role in spearheading change in the performance of agricultural cooperatives. The critical factor is the elimination of middlemen and brokers whose privileged information continue to deprive farmers of what is due them.

Fundamental to the country’s B2B is up to the minute updates in market information which helps cooperatives line up suppliers and consumers, negotiate contracts, solicit joint venture partners, arrange for delivery of goods and make payments (Sun Star 2002, 1). There are managerial issues to consider such as the integration of the electronic commerce with the business environment. Specifically, this means interfacing e-commerce with databases and existing IT applications. Research is through Ating Alamin Center where trade associations and cooperatives meet through an e-bulletin board.
The site is free because B2B earns from advertising revenue, a share in telephone company charges and a share in the bank settlement charges. About PhP 3 Billion pesos worth of agriculture products and services are traded annually by 1500 farmer cooperatives. This however is just a fraction of the gross value of agricultural production in 2006 estimated at PhP 617 Billion. Education and training are priority programs in collaboration with the Land Bank of the Philippines. The latter demonstrated a robust State-cooperative partnership by helping source funds for education and training and investing in B2B.

Underlying many of the synergies in movement is the conversion of data into standard format for many millionaire cooperatives in 1997 (WOCCU 2000). The World Council of Credit Unions (WOCCU), the apex trade organization of the international credit union system, supported Mindanao-based cooperatives with a Credit Union Empowerment and Strengthening (CUES) Model. The project covers 17 cooperatives with two specific interventions: the model credit union building with programs on finance, credit and marketing (USAID 2007). It illustrates the growing interdependencies between business strategy, rules, procedures, information systems software, hardware, databases and the growing scope and complexity of system projects and applications. Savings mobilization, an integrated financial and education delivery system, asset quality, rates of return and costs, liquidity and signs of growth were but some of the operational criteria of financial disciplines that were given emphasis to address quality products and services of cooperatives. WOCCU’s represents the world’s credit unions in 92 countries and serving 157 million members globally.

**Regional and Global Network**

The challenges of globalization, rapid technological change, and rise in global activism call for international bodies to seek partnerships, alliances and close working relationships in order to increase their knowledge base and impact on global developments. Of the many partnerships in the cooperative movement, the International Cooperative Alliance (ICA) features prominently. The ICA is an independent non-government association with 220 member organization in 84 countries (ICA 2006). As an integrated network, it has joint committee meetings and information exchange with the Committee on Agricultural Cooperatives of the International Federation of Agricultural Producers (IFAP) which has 85 national farmers organizations in about 60 countries,
ensuring collaboration on farmers training and empowerment as well as advocacy on policy matters. In April 2002, with 196 delegates from 18 countries, the ICA Regional Office for Asia and the Pacific coordinated a *Ministers Conference on Establishing Relevant Policies and Legislation for Cooperatives in the New Millennium* which was held in Nepal. A key topic that was discussed was the *Role of Agricultural Cooperatives for the Existence of Various Types of Cooperatives*. In 2004, it signed a Memorandum of Understanding with the International Labor Office (ILO) to implement a common cooperative agenda in the creation of decent jobs and poverty reduction. In 2005, it initiated the Global 300 project to profile the largest 300 cooperatives and mutual organizations to measure the contribution of the movement to the global economy, the preliminary estimate stood at three quarters of a trillion dollars. In 2006, it embarked on a new website for cooperative news and analysis to provide a web platform and business forum business opportunities. In 2007, the Singapore National Cooperative Federation (SNCF) hosts the ICA’s general assembly. The SNCF was established in 1980 and has 73 affiliates with a total membership of over 1.4 million. Its services include supermarket retailing, insurance, child care, elderly care, housing, thrift and loan, property development, broadcasting, travel, training, job placement, security, campus and environmental programs.

The Asia-Pacific Rural and Agricultural Credit Association (APRACA) is an association of financial intermediaries involved directly in rural finance and institutions working directly for the development of rural finance schemes and banking system in the Asia and Pacific region. Established in 1977, it promotes cooperation and facilitates mutual exchange of information, ideas and expertise in the field of rural finance. The strategies of APRACA include: promotion of financial innovation and sustainable financial services; support to replication of successful rural finance systems and technologies and projects; policy dialogue on financial reforms; continuing emphasis on research and development surveys, training visits, conferences, consultancy and exchange of information and experts; and continuing support to agricultural development.

In April 2004, a regional cooperative experts meeting on computerization to promote agricultural cooperative enterprise development (ACED) was organized by the Food and Agriculture Organization (FAO) Regional Office for Asia and the Pacific jointly with the Network for the Development of Agricultural Cooperative in Asia and the Pacific...
In attendance were sixteen participants from Bangladesh, China, India, Malaysia, Nepal, Philippines, Sri Lanka and Thailand. The purpose of the computerization was not to obtain one time data or information, but to provide a framework for live, interactive collection and dissemination of data such as the provision of market and price information.

**Conclusion**

Agricultural cooperatives in Asia have adopted a long term view of change and transformation. There is evidence that the application of ICT pays off. Simply put, those cooperative leaders who reflect and think about the future, and act about those reflections will be more successful than those who do not. With the global environment rapidly evolving, agricultural cooperatives must introduce new products and services, enter new markets and launch new marketing strategies incorporating the cutting edge of innovation and technology. Clearly, the scale and power of agricultural cooperatives depend on their structural features that shape and constrain ICT initiatives to continue to exert a powerful influence in the coming years. The combination of using multiple forms of communication to deliver the messages of cooperatives in terms of goals, direction and strategy as social enterprises will ensure visibility to government and the wider public. The effectiveness and sustainability of the cooperative movement is based on the clarity of purpose and the credibility of its leaders, combined with consistency and strategic involvement. Although each nation state has unique people issues to address the context and business environment of agricultural cooperatives, productivity is typically driven by a combination of leadership and technology as proven by the Japanese and the South Korean movement.
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