

Agriproduct Supply-Chain Management in Developing Countries

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The Benefits of Supply-Chain Practice in Developing Countries – Conclusions from an International Workshop

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Abstract

Interest in supply-chain management (SCM) in developed countries has grown as consumers demand product quality and integrity that can be achieved only by integrated management from farm to retail shelf. Effective relationships between members of a supply chain have been shown to contribute to improving its efficiency and innovativeness, and enhance its competitiveness. As food security is achieved in developing countries, farmers are seeking to generate income by sale of a more diverse range of products. This trend, combined with increasing urbanisation, population growth, rising standards of living and gradual changes to traditional markets for foodstuffs, has created interest in application of the concept of SCM to market situations in developing countries.

An international workshop (Bali, August 2003) attended by personnel from Asia–Pacific countries associated with projects that had a supply chain dimension reviewed the theory of SCM as it relates to developing countries, and the approaches that are being used to work with local supply-chain members on improving their products and service to meet the demands of markets. A key question considered by workshop participants was the distribution of the benefits which arise from SCM approaches, and the extent to which small farmers and traders share in these benefits. This paper reports on the key conclusions of the international workshop.

Supply-chain management (SCM) is ‘the management of the entire set of production, distribution, and marketing processes by which a consumer is supplied with a desired product’ (E. Woods <www.lfwm.net>; see also Woods (2004)). Interest in better management of supply chains in developed countries has expanded in line with increased consumer demand for quality,

convenience, novelty and other non-food attributes in the food products they buy, together with an increased concern over food-product integrity and safety. Satisfying these consumer demands can be achieved only by integrated management of the supply chain from farm to retail shelf. Many food-industry experiences demonstrate that effective, cooperative relationships between members of a supply chain can contribute to improving the efficiency of the chain, enhancing both innovation and competitiveness.

An international workshop on this topic was sponsored by ACIAR and the ATSE Crawford Fund (19–22 August 2003, Bali, Indonesia). The workshop reviewed the theory of SCM as it relates to developing countries, and the approaches that are being used to work with local supply-chain members on improving their products and service to

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meet markets demands. The 39 workshop participants included staff from current supply-chain projects in Australia, China, Ghana, Indonesia, Laos, Papua New Guinea, the Philippines, Thailand and Vietnam.

Supply chains in developing countries are typically long and fragmented, involving multiple small-holder producers delivering produce to collectors. Product then moves to traders and wholesalers and possibly several layers of retail distribution. Primary and secondary food processing may also occur, often at a small to medium enterprise scale. These chains are characterised by multiple product handling steps, poor information flows and a predominance of spot transactions over longer-term buyer–seller relationships.

As basic agricultural commodity prices continue their worldwide decline, and food security is largely achieved in most developing countries, farmers in Southeast Asia are increasingly concerned to improve their livelihoods through income derived from the sale of a more diverse range of high or added-value produce and products. This has produced a strong trend towards a more market-oriented agriculture, even at smallholder level in remote areas. Alongside this, population and incomes are rising, the region is becoming more urbanised, and food habits and markets are changing accordingly. The result of this is an increasing dualism in the agri-food sector. Shorter, more efficient, coordinated supply chains are growing, especially those associated with higher-value commodities and large-scale retail outlets (supermarkets and hypermarkets). Meanwhile, traditional supply chains continue to handle bulk commodities and basic food products for most of the population.

Given the current trend towards more managed supply chains in Southeast Asia, the workshop was organised to undertake a review of theory and current practice, to provide participants with a greater understanding of the potential benefits of the SCM approach, to enhance the capability of supply chains in the Southeast Asian region to supply produce to higher-value markets (e.g. supermarkets and the hospitality trade), to identify constraints to improving supply chains in the region (for better targeted research and development (R&D) activities), and to understand the implications of the rapid growth of the SCM approach for governments, the agri-food industry and rural communities.

Learnings from the Workshop

The potential benefits and implications of supply-chain management for smallholders

Experience with the development of more efficient and managed supply chains in Southeast Asia and elsewhere is that the number of suppliers tends to fall over time, as the nature of the relationship between producers and retailers deepens. Working with multiple smallholder producers entails additional transaction costs for SCM at retail level. Opportunities for smallholders to participate (and benefit) from such high-value chains are therefore uncertain. Mechanisms that reduce the transaction costs associated with small-scale production are needed, and this may well require significant R&D assistance.

One option to improve prospects for small farmers to participate and benefit from these chains is to form producer groups or associations. These may enable smallholders to work together to obtain the product volumes and economies of scale needed, continuity of supply over time, and increased market power. Producers need assistance to make the transition from a production to a market-orientation, to obtain and use information on consumer demand, to access and adopt better production and postharvest technology, and to incorporate quality and safety management systems.

Experience in the projects represented at the workshop indicates that existing supply-chain actors provide many services in addition to their principal marketing function (e.g. traders may provide informal market information, credit and technical assistance services). These services are also provided in a manner that is compatible with local cultures and values, something that may not be the case for externally driven SCM approaches. Another option for the development of efficient supply chains that include the small-farm sector is to build on existing supply chains, specifically incorporating a role for some actors (e.g. traders) to provide these and other services (e.g. organisation of produce supply volumes over time) in a culturally appropriate manner, so that transaction costs are reduced without the need for the creation of formal farmer organisations.

Enhanced capability for supplying produce to the higher priced supermarket and hospitality trades, by increasing product quality and supply efficiency

Timely, reliable information about consumer requirements is required if farmers are to become

more market-oriented, and to 'produce what they can sell', rather than trying to 'sell what they produce'. Workshop participants identified two types of market information:

- information on long-term consumer trends, influencing decisions on what to produce
- information on current market prices, important for decisions on when to sell.

Producers currently have poor access to both types of information, and may have basic misconceptions about consumer preferences. Examples of this were clear from the workshop cases presented (e.g. for potatoes in northern Vietnam and vegetables in Mindanao). Often this is to the result of poor communication between producers and traders.

Potential does exist to build on existing supply chains, e.g. for high-quality, local variety bananas to supermarkets in Indonesia, where adoption of SCM practices could be beneficial. This would require implementation, through the chain, of quality-assurance practices and standards, with culturally appropriate incentives in place for producers, and communication strategies to reach them. It also requires organisation to obtain required volumes over time from many small producers, and increased professionalism at producer and trader levels to get the product right; capacity building is therefore an essential component of any SCM program.

An additional barrier remains in many areas; the existing transport, storage and communications infrastructure is inadequate to ensure efficient access to the market. This has implications for national and local governments.

The development of enhanced and efficient supply chains for high-quality produce in domestic markets will help chain actors prepare for their eventual participation in export markets.

Better identification of the real constraints preventing improvement in the targeted industries, so that research and development activities can be implemented more effectively

There are few documented experiences of the SCM approach in the developing world, and especially for national markets in Southeast Asia. Participants felt that, based on these experiences, we still have only a preliminary understanding of the SCM approach in these situations. There is a real need to investigate, document and systematise cases, in order

to be able to demonstrate actual and potential benefits to rural producers.

There is plenty of relevant technology on production and postharvest handling available, but it is not 'organised' or readily available to supply-chain actors, resulting in missed opportunities and in wasted R&D effort that duplicates existing knowledge. Better organisation of, and access to, information on existing postharvest technologies would permit much greater efficiency through identification of knowledge gaps and better prioritisation of future R&D activities.

Workshop participants also acknowledged that we still lack a good understanding of the constraints (infrastructure, capital and policy) to adopting market-oriented approaches that farmers face in specific contexts. These range from illegal taxes to lack of tools to monitor quality at the farmer level.

Understanding the implications for governments, the agri-food industry and rural communities

Rural communities will benefit from adopting a market orientation only if smallholder producers in that community are able to gain from participating in higher-value chains. In this context, proactive facilitation is required to ensure that smallholders do indeed benefit from improved SCM. Some of the projects represented at the workshop were able to demonstrate effective facilitation of the supply chain improvement process by local and national government. Other actors (e.g. non-government organisations (NGOs)) can also undertake this role. Ensuring that smallholders can access higher-value markets will often require different levels of government working together with NGOs, the private sector, and academics to deliver training and facilitate integrated efforts.

It is important that the process of improving supply chains is carried out in a manner that is compatible with, and takes advantage of, the existing local culture and social structures. Opportunities should be sought to build on existing social capital (e.g. through engaging women and village leaders) and trying to work with the high levels of trust that already existing in some chains. This will facilitate the development of sustainable and efficient supply chains (by using social capital to minimise the transaction costs inherent in incorporating smallholder producers) and reduce any social impact of market-induced changes in these communities.

Priorities for Future Action: What Next?

During the workshop, group discussions took place to identify major issues where future R&D activity should be concentrated. These were subsequently synthesised and organised around three levels of intervention:

- macro level – policies and regulations
- meso/institutional level – R&D and capacity building
- micro level – local chain development and infrastructure provision.

This synthesis was presented to the 21st ASEAN/3rd APEC Post-Harvest Technology Seminar, which immediately followed the SCM workshop in Bali. This section of the paper summarises the synthesis of the SCM workshop outcomes at these three levels.

Policies and regulations

While the group discussions identified several specific policy areas where government action is needed, they also highlighted some deficiencies in the current policy-making process itself. The potential benefits that flow from including smallholder producers in high-quality supply chains, and the negative implications for equitable economic and social development if they are not included, are often poorly communicated to governments and policy makers. This may mean that the concerns and needs of rural communities and smallholder farmers are not adequately taken into account in the formulation of policies that affect these rural people, with implications for the success of poverty-alleviation initiatives in the medium to long term. It is vital that governments recognise the importance of creating an environment where smallholders can also benefit, in an equitable manner, from their active participation in higher-value supply chains. The institutions involved in SCM projects and initiatives in Southeast Asia have a responsibility to provide information and advice to national governments (and appropriate regional bodies) in fulfilling this policy-development function.

Specific areas where government policy interventions are needed if smallholders are to maximise their potential to be involved in, and to benefit from, higher value supply chains, are as follows:

- Suitable legal systems must be established and enforced. This will include creating a legal framework for contracts agreed between parties in

supply chains, and ensuring that the capacity and ability to enforce these contracts exists.

- Improving the availability of capital for business infrastructure investments (e.g. storage and distribution facilities) and access to credit for all actors in supply chains.
- Providing the public infrastructure that is a precondition for rural communities to gain access to markets and for business to prosper. This includes roads, harbours, law and order, and political stability.
- Provision of market information and support for training in business management and marketing for small and medium enterprises.
- Ensuring smooth operation of the markets within which supply chains function, through appropriate competition policies, regulatory frameworks for businesses and markets, and regulations and standards for food quality and safety.

Research and development

Workshop participants identified R&D activities in four distinct areas: markets, supply-chain development, postharvest technology and food quality/safety. In all cases, this is action-oriented (i.e. involves working with chain participants, government agencies and other stakeholders in a range of situations) and is thus highly collaborative. Many of the topics are framed as ‘how’ questions, the answers often involving the development of methods to help chain actors, and especially smallholders, to make better decisions as they enter supply chains and then participate in their subsequent development.

Markets – Key questions in this area include the following:

- How can timely market information be made available to farmers so they can decide who to sell to in ‘spot transactions—, and reduce the information imbalances often present in farmer–trader negotiations? Many projects attempt to provide market information to rural communities, but transforming these into sustainable services that continue after projects finish is more complex. This implies creation of sufficient demand for the service to support the cost of its provision, unless long-term public sector subsidies are available.
- Understanding the long-term trends in consumer markets can help farmers and other chain members decide what to produce. How can this type of

longer-term demand forecasting be made accessible to chain actors, including farmers?

- Once a chain is operating, how can the chain members explore new options and identify market segments?

Supply-chain development – The key issue here is how to ensure that smallholder farmers can be included in the development of higher-value and more-coordinated supply chains. As mentioned earlier, mechanisms are needed to reduce the additional transaction costs that are involved in working with many smallholders, rather than one or few major suppliers.

One option is to encourage the formation of farmer groups, so that from the perspective of a major retail chain, for example, the farmer group acts as a single supplier. In Southeast Asia, this approach has had mixed success to date, with such farmer groups often requiring extensive support for their formation (reducing prospects for replication), and lacking sustainability once such support is removed. Practical methods for forming and strengthening such farmer groups need to be developed. Group formation should be focused on a commercial opportunity (rather than being an goal in itself) and on following the process through to delivering business success. The process must be replicable and not too expensive.

Another option is to include traders in supply chains, specifically for their ability to organise smallholder farmers in a sustainable, low-cost and culturally appropriate manner. This implies building on existing arrangements to include technical assistance to producers in critical areas, such a quality assurance and related production practices. There has been very little documented experience of working with traders and smallholders in this way, and methods for accomplishing this— across the range of cultural situations found in Southeast Asia—are urgently needed.

For both these options, it is essential to communicate the incentives and rewards of participation in these new supply chains to farmers and rural communities in a culturally appropriate way, and to improve the business skills of these rural actors. Methods to achieve this are needed; they could involve training, facilitation and working with existing traders as providers of these services.

Once these supply chains are operating, their future development and competitiveness is related to several other key issues that were identified at the workshop, and which require further research. These

include how to Trust and credibility must be built between the different stakeholders in the chain. This type of social capital can reduce transaction costs (e.g. the need for formal contracts) between actors in the chain. Mechanisms that chain actors and facilitators can use to build trust in these situations may be culturally driven.

Benefit distribution along the chain is a key issue. Experience from the developed world suggests that benefits may accrue disproportionately to actors with most power in the chain (usually retailers). Mechanisms to ensure that smallholders receive an equitable return from their participation in these high-value chains are needed. These could include farmer organisation, to increase market power, and/or the adoption of ethical trading standards through the chain.

Small farmers are often at a disadvantage to other chain actors, for example as regards access to credit (where they may lack collateral) and to legal services (e.g. for contract enforcement). How to resolve these imbalances, through, for example, novel credit arrangements, needs investigation.

Finally, a supply chain is necessarily focused on one commodity, product and market. Enhancing the performance of one chain may have implications for others, and for the wider society and natural environment. For example, increasing production of one commodity as demand within a supply chain expands, could greatly affect land-use patterns and livelihood strategies in a rural community, affecting (positively and/or negatively) both environmental and social sustainability. It is important that these wider implications of supply-chain development are captured in the decision-making processes of the different actors involved in the chain. Mechanisms to facilitate this need to be developed.

Postharvest technology – Workshop participants were more concerned with accessing existing post-harvest technologies than with the development of new technology. This requires better organisation of existing information, and enhanced access to this information at the level of rural communities and the agencies that provide technological support services. Short-term technological priorities for small farmers were identified as:

- cold-chain development
- shelf-life improvement
- quality assurance.

Food quality and safety – Existing knowledge about food quality and safety issues is not extending down the chain to farmers, or to consumers. Mechanisms to ensure that farmers are aware of the issues, and the steps they need to take to overcome any problems, are needed. Direct involvement of other chain actors — traders and retailers — in communicating and addressing these issues (and implementing appropriate assurance systems) is probably essential.

Capacity building

Training topics that the workshop identified included:

- increasing the market orientation of chain members
- building the business skills of chain members
- enhancing chain members' awareness of food safety issues and measures to deal with them.

If smallholder producers across Southeast Asia are to benefit from their involvement in supply chains, this implies a massive effort. Strategies at national (and perhaps regional) level for developing and delivering this training need to be defined, including who should be responsible for delivery, and who exactly should be trained. As agriculture becomes increasingly market-oriented, it is clear that training smallholder farmers (and their organisations) in these areas is essential, but how this should be accomplished when support services are weak, especially in more remote areas, is not clear. The strategy should meet the need to strengthen rural support service institutions capable of providing this type of training.

Building supply chains at the local level

In order to maximise the prospects for small farmers to benefit from their involvement in higher-value supply chains, it is important that lessons are learned from supply chains that are now being developed. The key process at local level will be action learning; that is, learning by doing. It is likely to involve processes such as benchmarking, best practice, and case-study analysis across a range of supply chains in different countries (in order to provide culturally acceptable solutions), types of products and market situations, aiming to improve the efficiency of individual chains, and the benefits they provide to all actors. The results of such a cross-case analysis should translate into improved performance and a greater scale of benefits to all participants from these chains.

The question of entry points for small farmers and how to build on existing products and chains to access higher quality and new markets is also likely to be informed by case analysis.

Practical, local-level pilot activities will also help to identify appropriate and high priority roles for government, NGOs, producer organisations, and the private sector, in supporting chains. One positive feature of the current environment is that decentralisation policies in many countries have created an opportunity for local (provincial or district level) initiatives. This creates scope for piloting a range of innovative solutions, including local policies.

Infrastructure provision

Infrastructure constitutes a major barrier to small farmers participating in high-value chains. Ensuring adequate storage, handling and transport facilities will be critical to chain competitiveness, as will ensuring that the chains have access to that infrastructure. Decentralisation can also be important, so that the provision of basic infrastructure investment can be addressed through appropriate local policies, as well as at a national level.

Conclusions

Workshop participants concluded that SCM is becoming increasingly important in developing countries because:

- the supermarket sector is already well established (in major urban centres) and shows high levels of capital investment and market share growth
- traditional food products in domestic markets will face increasing competition from imports
- consumers across the region, and international retailers, share a desire to ensure that all products (in both traditional and more-managed supply chains) move towards global standards of food safety and health.

The growth of managed, high-value supply chains has profound implications for smallholder producers across the developing world. One key issue identified and considered by workshop participants was that of the distribution of benefits that arise from enhanced SCM, and the extent to which rural communities, smallholder farmers and traders across Southeast Asia can share in these benefits. Several key areas were identified where action is required in order to

maximise the potential of small farmers to participate in, and benefit from, such supply chains.

It is important that action, based on these ideas and issues, is indeed taken. Governments need to be informed of the implications of these changes for the small-farm sector of their economies. Agencies working in the rural development and agricultural sectors need to incorporate these major agri-food sector developments into their strategies. Retail chains need to become more aware of the wider social and environmental consequences of a SCM approach that tends to place most emphasis on economic efficiency. The people, communities, enterprises and other actors involved in producing, processing, and marketing food products need to learn to take a more market-oriented approach, something that (for many) requires a new set of skills, including how to work together in different ways.

There is much we still need to learn about this process. Supply-chain management in developing

countries crosses many disciplinary boundaries. Research institutions and donor agencies will need to adjust to these realities and ensure that they are addressed in a coherent and holistic manner. It is also essential that research be action oriented, involving the various supply-chain actors themselves. This will help to ensure that efficient, competitive supply chains can make a significant and positive contribution to the development of prosperous and sustainable rural communities in Southeast Asia.

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