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Policy Options to Improve the Performance of Housewives' Groups in the Cottage Food Industry in Thailand

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Abstract

The purpose of this paper is to examine the policy options with the best prospects to improve the performance and competitiveness of housewives' groups in the cottage food industry in Thailand. The analytical framework is based on an analysis of private and value chain-level net benefits from alternative policy actions and research and training initiatives. Seven candidates for policy implementation with the best prospects for success are examined: industrial policy; improving food quality; branding and labelling; encouraging strategic alliances; increasing the managerial role of members in housewives' groups; educating members of housewives' groups and group leaders; and improving the organisational structure of housewives' groups. A suitable institutional setting is essential for policy success. We describe a chain governor and cooperative research centre for cottage foods that would fit neatly into the existing policy milieu in Thailand. This paper highlights the potential to improve the performance of housewives' groups and stimulate its growth as a key income-generating activity for rural households in developing countries.

Introduction

The food industry in Thailand comprises various types of food manufacturers, including local processors who produce so-called "cottage foods". The cottage food processing industry mainly comprises community enterprises such as the "housewives' groups". These groups consist of a number of housewives who combine their food processing activities in a particular district or village. Housewives' groups were set up in rural areas as a part of a program for economic and social development. At the beginning, their activities were primarily to support agricultural processing in the household, because there were excess outputs of fresh agricultural products that could be used to add value and increase farm income. Predominantly self-sufficient production changed to commercial production when housewives' groups became successful in selling their products. Commercial business in the housewives' groups was developed during the 1990s with the national government providing money and production knowledge to

¹ We are grateful for the comments and suggestions made by the editors and anonymous reviewer. Any errors made remain the responsibility of the authors.

them. Nowadays, housewives' groups have become an important enterprise in rural areas. They have developed into a wealth-making opportunity for group members and contributed to the acceleration of market reforms in the rural economy.

Earlier studies by Nonthakot, Villano and Fleming (2008) and Nonthakot (2009) have shown that while some housewives' groups have an ability to manage their businesses well, many groups still encounter problems such as lack of business skills (production, marketing, financial and human management) and quality control. National government policies and programs such as the *One Tambon One Product* (OTOP) and networking projects have been influential in assisting the growth and development of housewives' groups. Yet despite the benefits derived from these projects to develop their businesses, housewives' groups are under constant pressure to retain their competitive advantage by performing better than their competitors in the food processing supply network. This pressure is only likely to intensify in the future. For them to survive, housewives' groups need to be constantly improving their processing operations.

Nonthakot, Villano and Fleming (2008) and Nonthakot (2009) showed that government support appears to have improved the performance of housewives' groups, at least in terms of their technical efficiency. The findings of their analysis suggest that government policy mechanisms can increase participation by housewives' groups in the profitable value chain for cottage food products. They can be used to identify specific policy areas to improve the performance of these groups, and make a contribution to the study of Thai food cluster groups that has previously been undertaken by the national government. In addition, given the challenges housewives' groups face in fitting into the broader domestic and export markets, the results from Nonthakot, Villano and Fleming (2008) confirm that membership of particular types of strategic alliances and the benefits of high-level vertical alliances are important factors. These factors can be used to design policies for the cottage food processing business that strengthen the business enterprises of housewives' groups. Our starting point is that housewives' groups can benefit from being members of strategic alliances, while the private firms and other housewives' groups that are non-members of the alliance cannot procure such benefits. In order to attain the benefits of strategic alliances, governing institutions should play a role in establishing a policy framework and a set of policy mechanisms.

In this paper, using an established framework for policy analysis, we examine policy options for developing the businesses of housewives' groups operating in cottage food industries in northern Thailand, together with their research, training and institutional implications. These groups have played a significant role in the social activity of rural areas in Thailand, and have successfully engaged in the manufacturing processes of cottage foods for a considerable period.

The paper is organised as follows. The second section provides a brief overview of the housewives' groups in Thailand. The third section reviews the framework to be used in evaluating policy options for improving the cottage food value chain. It is followed in section 4 by some policy options arising from the discussion of policy mechanisms. Implications for R&D and training program are presented in the fifth section followed by the discussion of the institutional innovation and governance structure. It is followed by a concluding section summarising the main policy and institutional recommendations.

Housewives' Groups in Northern Thailand: A Brief Overview

Housewives' groups are one of the many types of existing groups in the rural areas of Thailand. They are defined as rural women who combine into a group to share knowledge, money and their labour. The original purposes of such groups were to help

each other achieve welfare, health and family goals, which have contributed to the development of the rural economy and the macro economy (Department of Agriculture Extension, 1995).

The first housewives' group was set up in 1975. The number of groups rose to 14,000 in 1987 and to 19,143 today. Initially, the main activities of housewives' group were purely social in nature – such as cooking for traditional and religious festivals and other celebrations. These activities have now expanded to include food processing for commercial purposes, art work and handicrafts. The groups have attracted considerable attention from the national government, especially, in the effort to reinvigorate the agricultural sector following the 1997 economic crisis. Initial studies indicated that housewives' groups have contributed substantially in the improvement of rural income and employment, and in strengthening local communities' capabilities (Harter, Soedarsono and Akmal 1999, Jantradech 2003).

Following the guidelines of the Ministry of Agriculture and Cooperatives, the main objectives of the housewives' group are to encourage women in the agricultural sector to help each other and develop job skills and training; support women in their agricultural work and teach them to allocate and manage their family resources; give education on home economics to women in the country; establish centres of knowledge about agriculture, society and the environment; form groups that can facilitate communication between national government officials and country women. Accordingly, housewives' groups are divided into different categories. Group 1 comprises successful groups that can manage their businesses by themselves. Group 2 comprises groups that can manage only the members of groups and need financial, equipment and training support from the government and private organisations. Group 3 consists of the weak groups that cannot manage their members effectively nor undertake successful business ventures; they conduct activities in their groups only occasionally.

Several studies have been conducted in order to examine the mechanisms and performance of housewives' groups. Wiboonpongsee (2006) examined the management aspects and delineated three types. First, the *applied groups* engage in a particular business and qualify for government support. They are usually managed by a chairperson and members do not participate in decision making. Second, *community groups* comprise members who are all involved in making decisions, and everyone shares in the benefits of group activities. The third type of housewives' group delineated by Wiboonpongsee (2006) is a *private group*, which has a leader who is usually the owner of the business. This group can receive government support only in the form of knowledge dissemination and training support.

The performance of housewives' groups participating in the cottage foods processing industry has been analysed by Sriboonchitta, Wiboonpongsee and Gypmantisiri (2000), Nonthakot, Villano and Fleming (2008) and Nonthakot (2009). Sriboonchitta et al. (2000) identified a number of weaknesses of the groups and threats that they face in operating their businesses. Nonthakot et al. (2008) and Nonthakot (2009) demonstrated that some housewives' groups are able to manage their businesses well. However, many housewives' groups still encounter problems such as lack of business skills (production, marketing, financial and human management) and quality control. National government policies and programs such as the *One Tambon One Product (OTOP)* and networking projects have been influential in assisting the growth and development of housewives' groups. Yet despite the benefits derived from these projects to develop their businesses, housewives' groups are under constant pressure to retain their

competitive advantage by performing better than their competitors in the food processing supply network. Villano, Khruethai and Fleming (2013) analysed the factors influencing the performance of housewives' groups and tested for the effects of strategic alliances on their productivity. They suggested that the role of the government is crucial in improving group performance, and it is this role that is the focus of our study. However, we look beyond a national government focus to consider also the potentially valuable role of a chain governor in bringing about net chain benefits. We recommend a policy framework in which the appropriate functions of private actors in the chain, a chain governor and the Thai national government are stipulated.

Conceptual Framework

The implementation of policies and programs designed to benefit housewives' groups requires a suitable institutional framework, particularly for research and training, if their outcomes are to improve groups' level of participation in the food processing network in general and the cottage foods value chain in particular. (We distinguish a value chain from a supply chain or network by its market orientation whereby chain participants focus on what Micheels and Gow (2008, 128) referred to as 'continuous value creation for the customer'.) This approach is consistent with the idea espoused by Crook and Combs (2007) that 'collaborative value chain management' results in 'a rising tide that lifts all boats'. It is also consistent with the idea of developing a 'best value supply chain', as championed by Ketchen and Hult (2007). A problem with Ketchen and Hult's (2007) idea of a best value supply chain is the potential for misalignment between financial incentives for individual participants in the chain and the collective incentives to chain participants. This misalignment is similar in nature to an underinvestment in public goods (and presence of public bads) in the economy in general. Chain participants maximise their private net benefits, leading to suboptimal chain performance because of the underinvestment in what we term 'chain goods' (the value chain equivalent of club goods) and possible overinvestment in 'chain bads' (the value chain equivalent of club bads) (Umberger et al. 2012, Griffith et al. 2015).

Chain goods resemble club goods in that they are non-rivalrous and selectively excludable. That is, members of society outside the value chain are excluded from sharing in any benefits derived from collective activity within the chain (Umberger et al. 2012, Griffith et al. 2015). An example of a chain good that is particularly relevant to this study is an investment in research and development (R&D) within the cottage foods value chain that would lead to superior performance, but which is not financially attractive to a single participant in the chain. Technical and pecuniary spillovers among participants at different levels in the chain are a common factor leading to such an outcome. Such chain goods can be captured where participants engage in strategic alliances. Rolle (2006) observed that horizontal alliances can be particularly useful in the application of new skills and technical expertise by sharing development R&D knowledge and experiences, and links with governing institutions and research institutes can facilitate learning to help chain participants overcome existing technical and knowledge constraints.

An analytical framework is needed to detect the presence of chain goods, and to assess whether intervention through a strategic alliance is warranted to improve its overall performance and progress towards Ketchen and Hult's (2007) 'best value supply chain'. To do this, we adapt and extend the framework developed by Pannell (2008) to the context of a value chain.

Pannell's (2008) policy framework is adapted and extended to develop a map of recommended policy mechanisms, as presented in Table 1.

Table1. Alternative policy mechanisms to generate changes in the management of the value chain for cottage foods.

Category	Types of policy mechanisms
Positive incentives	Use of financial or regulatory instruments to encourage change in the value chain
Negative incentives	Financial or regulatory instruments to inhibit change in the value chain
Facilitation	Extension, technology transfer, education, training, communication and demonstrations to support the value chain network through strategic alliances
Technology change	Mechanisms that alter the benefits of value chain management options
No action	Informed inaction

Source: Adapted from Pannell (2008, 4).

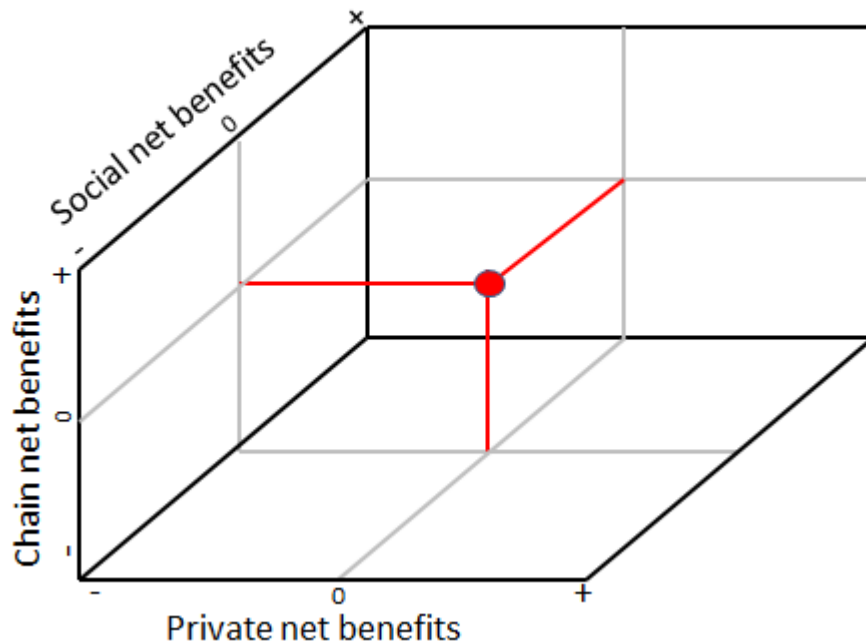
A major limitation of Pannell's (2008) framework is that it assumes all actions take place in a public-private milieu when often joint action is possible at an intermediate level within the value chain. For the latter to occur there is a need for a chain governor to exist, namely an organisation that funds and manages any such action. The chain governor may operate with national government assistance (for example, where the latter secures its funding sources) or without it.

Figure 1 is an extension of a diagram presented by Pannell (2008, 12) (but without the boundaries to alternative actions for simplicity) to recognise that actions to reap net benefits can occur at three levels: private (by individual food producers); chain (by the chain governor on behalf of chain participants); and public (represented by the national government). The position in three-dimensional space represented by the red dot is a special case where there are no net benefits from any of these three perspectives.

The need to consider all three dimensions is based on three linked assumptions. First, the chain governor will take no action if there are net benefits from private action within the chain even if there are spillovers to chain participants, as long as the net spillover effects are positive. Second, the national government will take no action if there are net benefits from private action even if there are spillovers to Thai society, as long as the net spillover effects are positive. Third, if spillover effects are negative in either of the above cases, the relevant governing agency will take remedial action.

In the discussion that follows, we consider only the interface between private and value chain actions to keep matters simple and to focus on the interface of most interest in this paper. We also maintain the boundaries drawn by Pannell while recognising that they will differ according to the local circumstances. The drawing of these boundaries is an empirical issue that we do not tackle here.

Figure 1. Interface of net benefits at private, chain and societal levels

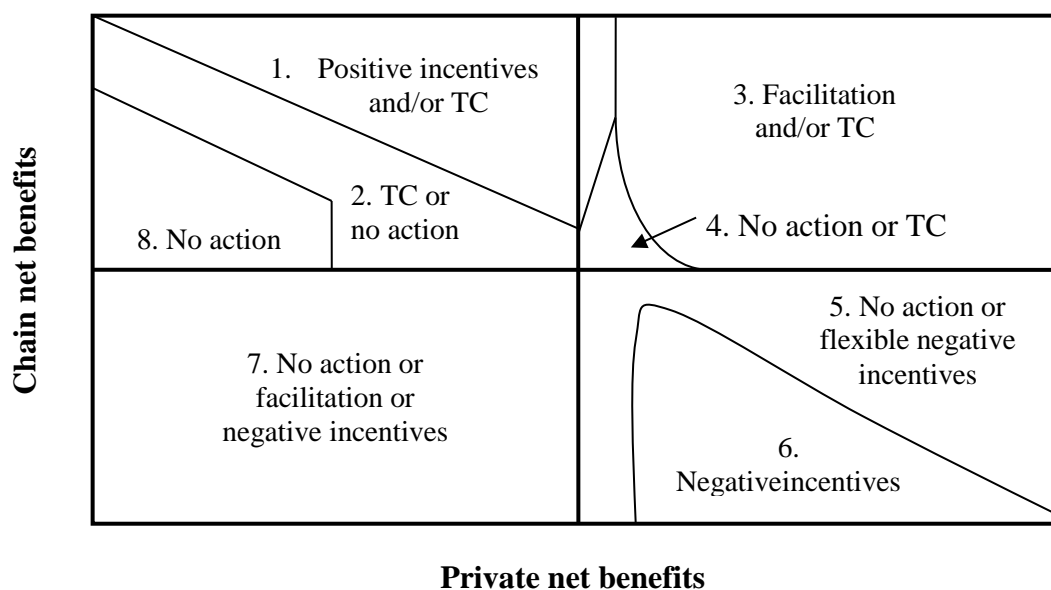


Source: Adapted from Pannell (2008, 12)

Figure 2 shows the areas for possible actions within the cottage foods value chain with different levels of chain and private net benefits that they may generate. The horizontal axis is defined as the private net benefit derived by individual participants (housewives' groups or private firms) in the value chain for cottage foods. The vertical axis is defined as the chain net benefit derived by all participants in the value chain for cottage foods. We change Pannell's (2008) use of social net benefit to chain net benefit to reflect the narrower focus of our policy analysis. Chain net benefit is defined as the net benefits derived by all firms and individuals who participate in the value chain for cottage foods. Within this framework, we identify alternative policy mechanisms to generate changes in the management of this value chain.

The best choice of policy mechanism to encourage technical change (TC) depends on the levels of private net benefits and chain net benefits. Pannell (2008) calculates benefit-cost ratios (BCRs) to compare participants' behaviour with and without the intervention. Policy mechanisms are selected from five categories in Table 1. Figure 2 shows the allocation of policy tools to interventions depending on the resulting level of chain net benefits and private net benefits. The boundary of areas 8 and 2 is raised slightly due to learning cost. For projects with positive but low private net benefits, positive incentives are used rather than facilitation because of the time lag to adoption; it is assumed that positive incentives can eliminate the lag. For projects with positive but low chain net benefits and private net benefits, facilitation is not suitable because the transaction costs are higher than the resulting benefits. The boundary for area 6 is moved to the right because, when learning costs are considered, housewives' groups or private firms would not adopt changes with low private net benefits.

Figure 2. Recommended policy options for different levels of chain net benefits and private net benefits



Source: Adapted from Pannell (2008, 12).

Figure 2 can also be used to consider technology change. According to Pannell (2008), technology change refers to any intervention that improves the net benefits of the value chain for cottage foods, such as strategic R&D, participatory R&D with chain participants, provision of infrastructure to support a new management option and training to enhance the performance of existing technologies. Technology change through R&D is generated by new potential projects that are to the right of (more attractive to housewives' groups or private firms), or above (more attractive to the chain), existing options. In addition, technology change through training may move an existing value chain change to the right and/or upwards.

The comparison between the benefits of a technology-change intervention and the benefits of other changes in the value chain needs to be made according to the location of BCR lines. Pannell (2008) observed that there are several factors influencing the ability to generate technology change: the predicted improvement in public or private benefits of new technology compared with the best previous technology; the chance of R&D delivering those predicted benefits; the time lag for improving technology; the discount rate; and the cost of R&D management. He posited that the lag between intervention and benefits is expected to be shorter for training than for R&D, whereas the potential for improvements in private net benefits may be higher for R&D. While his concern was with the natural environment, the same principles prevail in value chains.

Policy interventions that fall in areas 1, 3, 4 and 5 would generate positive net benefits. On the other hand, a policy intervention that falls in areas 2, 6, 7, and 8 may have any combination of positive or negative private or chain benefits. Positive and negative incentives are provided in different situations. Consider actions in areas 3, 4, 5 and 6 that all yield positive net benefits for private firms. If learning costs for private firms are taken into account, the following appropriate regulatory policies or pricing mechanisms

to influence the attractiveness of each project to the participants in the value chain for cottage foods are proposed:

- The chain governor can use pricing mechanisms to generate positive incentives in area 1, where it would generate chain net benefits that outweigh private net costs. It would also use positive incentives that yield small private net benefits for situations where there is a time lag to adoption. Otherwise, positive incentives are either not necessary (significant private incentives to change already exist), would result in negative social net benefits, or technology change would be a preferred option.
- In area 2, the option of R&D to generate technology change is preferred to positive incentives to value chain participants, with the boundary between areas 1 and 2 depending on the BCR of the R&D. If the BCR is insufficient, no action should be taken by policy makers in this area.
- It is not necessary for the chain governor to make policy choices in area 3, because private firms would adopt changes (such as entering into strategic alliances) without the need for it to provide any incentives. But projects facilitating decision making by chain participants and/or technology change are suited here. Paraphrasing and adapting Pannell (2008, 13), all benefits from changes in the value chain are captured by private firms in the top-right quadrant. It means that technology change that only improves private net benefits might not be an attractive option to a chain governor trying to improve chain net benefits. Technology change that enhances the chain benefits from changes in management of the value chain would be a more attractive option.
- Area 4 shares a similar approach of policy inaction to area 3. As in area 3, technology change is well suited to projects that result in both low positive chain net benefits and low positive private net benefits. On the other hand, facilitation is less well suited and not advised for situations of low benefits because of lags and learning costs.
- In area 5, where private net benefits are sufficient to outweigh chain net costs, no action is required by the chain governor. Alternatively, a relatively flexible negative incentive instrument may be used to persuade chain members to make decisions consistent with the overall welfare of participants in the value chain if there is uncertainty about whether private net benefits are sufficient to outweigh chain net costs. However, inflexible negative incentives, for example command and control, should not be used in this case (Pannell 2008) and are especially unsuitable for use in value chains for foods.
- In area 6, on the other hand, chain net costs are higher than private net benefits, and only negative incentives should be used by the chain governor to inhibit private action that is to the detriment of the whole value chain.
- Chain net benefits and private net benefits are both negative in area 7. If it is recognised by value chain participants that private net benefits are negative, no action is needed by the chain governor. But negative incentives or advice might be needed to curb the actions of firms if they misperceive the situation and expect to achieve private net benefits. It is unlikely that technology change would result in an outcome situated in this quadrant as the BCR would not be greater than 1, and so it is not included as an option for action.

In all cases in area 7, any intervention by the chain governor needs to be compared with a strategy of no action.

- Policy does not have any role in area 8 because chain net benefits are larger than private net benefits. Regardless of the positive chain net benefits, private firms cannot achieve net benefits from technology change or incentives offered by the chain governor sufficient to make it profitable for them to participate in projects.

Adapting the analytical framework of Swann (2003), policy and research errors are particularly likely to occur in two quadrants of Figure 2. First, a Type 1 error occurs when a collectively profitable policy or R&D project for the value chain is not implemented (areas 1 and 2 in the upper left quadrant): policy makers are often susceptible to overestimating the incentives for private enterprise to engage in activity that benefits the whole chain. Second, a Type 2 error occurs when a collectively unprofitable policy or R&D project for the chain is implemented (area 6 in the lower right quadrant): policy makers may also underestimate the social damage wrought by members of the chain undertaking private activity.

In conclusion, the different emphases given to policy and intervention to conduct R&D in the areas designated in Figure 2 reflect the distribution of net benefits. Policy recommendations and decisions to support policies through R&D need to be made by the chain governor mindful of the potential for Type 1 and Type 2 errors.

Analysis of Policy Options

By using the framework discussed above, we outline below the policy options that can be considered in the context of housewives' groups. Policy options are directed towards maximising chain net goods to the whole value chain for cottage foods and private net benefits to housewives' groups in particular. Seven policy recommendations for the chain governor to examine that arise from the research results presented by Nonthakot et al. (2008) are now outlined.

A. Industrial policy

In the context of firm strategies and rivalry in the cottage foods value chain, barriers to local competition should be eliminated. Private business policy is different from chain policy because it focuses on distorting competition, while the chain policy concentrates on enhancing competition in the value chain (Porter 1998) and maximising chain net benefits. Industrial policy involves regulation to prevent unfairness in the value chain, for example actions by private firms to exert oligopolistic/oligopsonistic power to the detriment of others in the value chain such as housewives' groups. These actions may make individual private firms better off (positive private net benefits) but the chain as a whole worse off (negative chain net benefits). As a result, regulations introduced by the chain governor – almost certainly with the legislative backing of the national government – to offset this power would be placed in policy area 6 (Figure 2). In situations where the costs to other private participants of these actions outweigh the benefits to the private firms taking the action, resulting in negative private net benefits and negative chain net benefits, the relevant policy domain would be area 7. Again, negative incentives may need to be introduced by the chain governor.

While the chain governor needs to persuade private firms through regulation and incentives to change their attitudes and roles to upgrade the value chain, it also has a facilitatory role consistent with operations in area 3. For example, the market structure of dehydrated longan comprises a large number of small-scale producers but the buyer

side of the market is an oligopsony in which buyers exercise some monopoly power. In order to reduce this problem, the private business sector was encouraged to assist housewives' groups in input use by sharing specialised vocational and technical resources. Cooperation with research institutes would help to develop research for support on regulatory, quality and managerial issues. In the context of firm strategy and rivalry, private firms should be encouraged to join the trade fairs that the chain governor organises for the housewives' groups and send delegations. Collaboration with the national government enhances export promotion efforts. Another role for private firms is in related and supporting industries. They should encourage housewives' groups to be local suppliers and to attract local investments by suppliers based elsewhere through individual and collective efforts.

B. Improving product quality

The OTOP policy was established by the national government in 1997 to encourage every village to have one product made entirely with local inputs that should be unique, creative and represent the culture of the area. An OTOP brand, with stars earned by the housewives' groups from the government, is used to guarantee the quality of their products. While an OTOP brand can be used as a brand for housewives' groups' products, nearly 50 per cent of the housewives' groups' products cannot attain any stars. The result of examining the relationship between the quality of products and the performance of housewives' groups shows that a higher-quality product can improve technical efficiency (Nonthakot et al. 2008). If firms can control the quality of products, they can better control product prices.

Various factors observed by Nonthakot (2009) indicate that quality control is well below required standards. For example, Nonthakot (2009) show that only 4.2 per cent, 8.4 per cent and 13 per cent of housewives' groups have hand hygiene action after handling potentially contaminated foods, objects or surfaces and prior to handling, adequate cleaning of place, and adequate washing of utensils, respectively. Housewives' groups also suffer from lack of training in the use of modern technology, and accessing credit. According to these weaknesses in quality control, the relevant policy domains would be areas 1 and 2, and possibly area 3 (Figure 2). Technology change and/or positive incentives are both potentially valuable ways for participants in the value chain such as housewives' groups to improve product quality. Facilitatory measures taken by the chain governor could also improve product quality.

C. Branding and labelling

In order to strengthen housewives' groups' positions in the cottage foods value chain and convince consumers to purchase the products that they seek, information for consumers must be clear and consistent. Nonthakot et al. (2008) contended that in creating policies to increase consumer demand, labelling promotes consumer confidence and awareness concerning product attributes. An inability to develop recognised brands is a problem facing housewives' groups, but brand development relies on a high degree of quality control to be achieved.

Nonthakot (2009) reported that the housewives' groups always mention that there are many labels for housewives' products according to the definitions made by various organisations. Examples are OTOP, 'Clean Food Good Taste', 'Blue Flag', 'Home-made' and 'Locally grown'. With this variety of brands, consumers have difficulty delineating what each label guarantees; in addition, the labels lack clear identification of how the food was produced. The appropriate policies to overcome this confusion would be in area 3 in Figure 2. Projects that facilitate housewives' groups to develop specific

brands backed by consistently good-quality products should send clearer signals to consumers about the standard of quality control in the value chain.

D. Encouraging strategic alliances

Unlike the situation that results in club goods, where the boundary of the club is clearly defined and enforced by the club management, the boundary of the value chain is relatively porous. New entrants to the chain in response to an investment in chain goods cannot be easily excluded from benefiting from the supply of these goods. A club can charge a higher membership joining fee subsequent to an improvement in the services it provides, but a comparable situation does not apply for a value chain. Statutory levies imposed on key participants in the value chain may be imposed but they are not suitable for cottage food markets where quality varies considerably. Strategic alliances are a way to restrict the flow of benefits from chain goods to non-members through quasi-excludability. Excludability is 'quasi' in the sense that, while non-members of the alliance can theoretically benefit from these goods, actions can be taken within the alliance that make it very difficult and/or unprofitable for them to do so. Members of the strategic alliance can thereby appropriate most of the benefits.

The relevant policy domains to encourage strategic alliances would be 1 and 3. Policy makers may provide positive incentives to private firms to collaborate more with housewives' groups (area 1), but facilitatory measures in area 3 are likely to be of most assistance to chain participants such as housewives' groups becoming more integrated in high-level vertical alliances. For example, the significant role of networking in Thailand by the Act on Community Enterprise Promotion (B.E. 2548) and a cluster project by the Ministry of Industry from 2004 remain important policies for food producers, because clusters allow firms to operate more productively in sourcing inputs, accessing information technology and institutions, coordinating with related companies, and monitoring performance of suppliers. Furthermore, linkages among members of strategic alliances can generate synergies (Porter 1998).

The combination of vertical and horizontal strategic alliances can benefit from the formation of strategic alliances in terms of productivity and profitability. Cooperation should be encouraged between the chain governor, government agencies, housewives' groups and private firms in the same industry for improving horizontal strategy to develop research programs in order to create new technology. For the vertical strategic alliances, housewives' groups can work with entering into relationships with groups in the value chain that supply them with inputs or buy their outputs.

The results from this study reveal that high-level vertical strategic alliances have a positive impact on the performance of housewives' groups as these groups can improve the technical efficiency of their processing operation. There is a need to foster participation from firms in the cottage foods industry in such alliances. But model results presented by Nonthakot et al. (2008) show that high-level strategic alliances were not associated with higher production frontiers, suggesting that their influence is confined to higher technical efficiency alone. Indeed, Teece (2003) argued that both horizontal and vertical alliances are necessary for firms to derive greatest benefit from the development of technology and innovation. Similarly, the development of appropriate technology from research also combines vertical and horizontal strategic alliances to add value within the cottage foods value chain. Value chain participants such as the chain governor, research institutions and government agencies could be non-equity horizontal alliance partners developing relationships with housewives' groups and private firms in the same industry. Outcomes from their research encourage investment

in new technology, new products and new processes. Horizontal alliances can also be useful for participants by sharing R&D results and knowledge between government and private firms (Rolle 2006), and engaging in technical training programs (see below). As a result, the cottage foods value chain can be improved.

E. Increasing the managerial role of members in housewives' groups

Although the management of housewives' groups had been developed from the cooperative concept (members help each other, everyone is an owner of the business, and members get dividends), it has been learned from previous studies that a low level of cooperation within the groups is a significant problem facing housewives' groups (Keatmaneerat 1991; Litprasert 1997; Ploydee 1997; Satchawiso 1997; Jomud 1998). Nonthakot et al. (2008) showed that housewives' groups still experience this problem, finding that only 18 per cent of housewives' groups were set up by the members of groups despite evidence that groups set up in this way are more technically efficient than private groups. Furthermore, the group leaders are the main source of funds for more than half of housewives' groups (Nonthakot et al. 2008). It is evident that the cooperative concept should be strengthened in housewives' groups as a way to raise their technical efficiency.

The empirical results reported by Nonthakot et al. (2008) reveal that the housewives' groups distributing dividends among group members have higher levels of efficiency. For this to occur, a policy encouraging and assisting groups to be established on a cooperative basis is suggested, which is located in area 3. Training and communication activities should be provided by the chain governor on the managerial role of members in the housewives' groups set up as cooperatives. Training courses could be directed towards cooperative learning in classrooms, to help members of groups make both cognitive and affective improvements. Cooperative learning can facilitate improvement in performance by housewives' groups providing members of groups with opportunities for an effective learning process, for example by active processing of information, self-regulation of the learning and social interaction.

F. Education of members of housewives' groups and group leaders

As a form of budgetary support to members of housewives' groups in the value chain, general education as a facilitatory measure is a relatively cheap policy instrument given that it has numerous social benefits in addition to making group members better able to learn about value chain management practices. However, Nonthakot et al. (2008) found that education levels of members of housewives' groups and group leaders are not significant factors influencing the performance of the groups, assuming that the effect of education is to improve their decision making. Both group leaders and group members received only a primary school education (Nonthakot et al. 2008).

Results reported by Nonthakot et al. (2008) for specific food processing knowledge proved more positive with knowledge of the food manufacturing process and business management processes having a positive effect on performance of the groups and suggesting that knowledge support for housewives' groups is beneficial. In Figure 2, the policy domain for providing this support would be in area 3, which should enable groups to accelerate the adoption of good value chain management practices with positive chain benefits as well as positive private benefits.

G. Improving the organisational structure of housewives' groups

Although the traditional style of management is the style adopted by most housewives' groups, other functions of business management can improve their performance. In

particular, Nonthakot et al. (2008) suggested that employment of a marketing manager would help the groups manage the appropriate number of channels in the value chain. The public relations officer has become an important position, because this position involves communicating information between members of a group and between a group and the community. The public relations function needs to be improved for recruiting new group members because the number of active members of housewives' groups leads to higher performance and in turn increases the proportion of income earned from saving activities by the group, which has a positive effect on its performance (Nonthakot et al. 2008). In Figure 2, the policy domain for providing support to improve the organisational structure would be in area 3.

Future Directions

Institutional Innovation

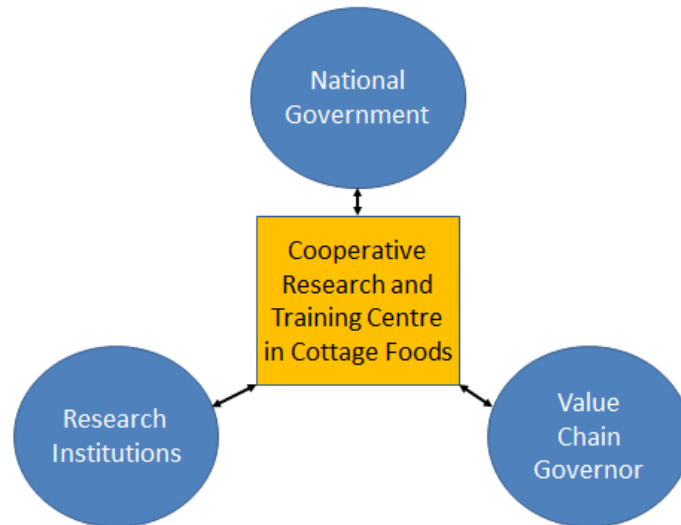
A. Cooperative research and training centre in cottage foods (CRTCF)

Because strategic alliances can benefit participants in a cottage foods value chain, the formation of a cooperative research and training centre in cottage foods (CRTCF) is a potentially useful form of alliance to add value by improving the quality of R&D undertaken and the knowledge and skills of participants. It could also provide an organisational structure through which the chain governor could implement enabling policies. The institutional structure for such a centre is described in this section.

The CRTCF would be a form of strategic alliance within the general food processing network that would involve all participants in the cottage foods value chain, including members of housewives' groups. Through the operations of the CRTCF, stakeholders could adopt improved technologies, learn to improve performance by increasing their technical efficiency, and understand and learn how to overcome marketing constraints in the cottage foods value chain.

The CRTCF would be built around collaboration between value chain participants (including housewives' groups), the national government and research institutions. As demonstrated in Figure 3, the CRTCF would be the nexus through which various stakeholders would exchange information, develop alliances and advance the position of cottage foods within the processed food network. Underlying the simple structure represented in Figure 3 would be a complex sub-structure. The national government (representing society at large) and the chain governor (representing chain participants) would need to collaborate on a variety of R&D initiatives because of the inherent difficulty in predicting, identifying and matching food R&D benefits to costs, especially given the likely diffuse distribution of benefits beyond the value chain and to different participants within the chain. Research institutions would be interested in undertaking a range of activities with different participants in the value chain who would have varying goals.

Figure 3. R&D collaborative structure



Source: Authors' own concept

B. Role of the CRTCF

Area 3 in Figure 2 is the major policy domain for intervention in the cottage foods value chain. The establishment of a CRTCF would be an appropriate medium through which the chain governor could act as a facilitator in R&D programs. Based on the Cooperative Research Centre concept in Australia (Department of Innovation, Industry, Science and Research 2009), the roles of the CRTCF are presented as a public organisation formed through a collaboration of private sector organisations (medium and small enterprises), industry associations, universities and government research agencies.

The seed for creating an institutional framework for research, training and policy making already exists at the Institute for Sufficiency Economy Research and Promotion (ISERP) at Chiang Mai University. ISERP aims to strengthen the socioeconomic base of society at all levels. Consistent with the concept of strategic alliance, it focuses on the importance of vertical and horizontal collaboration to strengthen sustainable development in Thailand, the Asian region and the world. As a result, participants at different levels in the value chain could benefit from the actions of others in the chain, such as private firms linking with a new supplier to outsource inputs and end-products. ISERP could serve as a managing agent for such a CRTCF, given its current mandate.

ISERP began developing strategies for rural industry in northern Thailand in 1995. A project emanating from this process was implemented to improve the cottage food industry in Chiang Mai and Lamphun between 1999 and 2001 and the improvement of local industrial handicrafts in the upper north of Thailand between 2001 and 2003. From 2004 to 2005, the target groups for analysis were changed from producers to researchers based on the project: the development of local researchers and a tripartite research exercise to strengthen community enterprises in upper northern Thailand, and the incubation of agricultural innovation for community enterprises in northern Thailand. The aim was to improve local enterprise through several projects, such as the research and development of the production system for agriculture and community enterprises.

The role and strategies of ISERP could be adapted in establishing the CRTCF. The objective of the CRTCF program would be to deliver significant economic, environmental and social benefits to the cottage foods industry by supporting end-user driven research partnerships between publicly funded researchers and end users to address clearly articulated, major challenges that require medium- to long-term collaborative efforts. The CRTCF program would link researchers and the users of research and training outputs with the trainers of cottage foods industry participants to focus R&D and training efforts. Another feature would be contributions by cottage foods industry participants to education programs to produce industry-ready graduates.

A CRTCF should be in a position to utilise government support (financial, equipment and knowledge) and the Ministries of Agriculture and Cooperatives, Industry and Public Health would be major stakeholders. The CRTCF committee would consist of an independent chair and other independent members. Committee members would be drawn from industry, research providers and Thai government agencies responsible for innovation and research to ensure that it has a broad range of expertise relevant to the needs of end users of cottage food products and the conduct of programs in R&D, education, resource utilisation and industrial activity. The role of the CRTCF committee would be to arrange CRTCF funding, and to plan, monitor and evaluate CRTCF programs during the period of operation.

The roles of the CRTCF in input supply would be the creation of specialised education, and training in business management and production management programs in collaboration with local universities and research centres. Production skills would be developed in chain-related technologies. For example, training in using modern equipment would be provided for local producers. Moreover, scoping studies would be conducted to determine how infrastructure, such as transportation and communication, could be improved to benefit participants in the cottage foods value chain.

Implications for R&D and Training

Todeva (2006) explained that R&D in an industry is undertaken through many activities. Examples are innovation in concepts and ideas and joint creation of knowledge; sharing knowledge between specialised knowledge fields; and emergence of new solutions to problems and their market realisation. Results of the modelling work conducted by Nonthakot et al. (2008) indicate that information and training are needed to support R&D management, and that the three main activities where information is most needed are in quality control, adoption of improved and appropriate technology embodied in machinery used in food processing, and business training.

Vellema and Danse (2007) presented a framework of the National System of Innovation (NSI) in Thailand that contains networks and arrangements between public and private actors. This system provides knowledge and technology and tries to maintain a balance between users and providers of this knowledge and technology. This framework is a promising one in which to focus on six research themes in research and training activities for cottage foods in Thailand:

1. How to design an innovative environment for R&D management
2. Influence of quality control in cottage foods on consumer behaviour
3. Appropriate processing technology for housewives' groups
4. Influence of business training on the performance of housewives' groups

5. The comparative advantage of various research organisations in facilitating and coordinating intense knowledge sharing among chain members
6. Brand development by housewives' groups.

A. Designing an innovative environment for R&D

Normally, R&D has been developed by government officers and academic staff in university or specialised research institutes, while cottage food producers and housewives' groups only give information to researchers. The development of participatory research between researcher and cottage food producers for designing research proposals can encourage an innovative environment for R&D. For example, the study of the improvement in the cottage food industry in Chiang Mai and Lamphun by Sriboonchitta et al.(2000)led to the establishment of a project for the development of local researchers and a tripartite research exercise to strengthen community enterprises in upper northern Thailand in 2005. This project created an environment for R&D by using a participatory learning action research model involving three groups of participants: researchers; local government officers; and local group leaders. The development of participatory research with rural enterprises can improve the skills of participants and result in better value chain management of the cottage food industry. Depending on the goals and nature of R&D projects, they are likely to fall in areas 1 to 4 in Figure 2.

B. Importance of quality control in cottage foods

R&D into the quality of cottage foods can result in a higher-quality end product that achieves a higher price. This advantage adds value in various activities of participants at different levels in the value chain. There is an opportunity for value chain participants to work together through research projects to establish standards for controlling the quality of their products. The Thai Standards for Community Products (TSCP) has the objective of upgrading the quality of food products, particularly cottage foods, to national and international levels in response to the government policy on the OTOP products (Thai Industrial Standards Institute 2008). The provision of knowledge of market trends by government officers provides another means to improve the products sold by housewives' groups.

Because R&D projects aimed at improving quality control in cottage foods will rely on associated initiatives in facilitation to be effective, they are most likely to be found in area 3 in Figure 2. But some projects might have high chain net benefits and relatively low private net benefits, in which case their natural home would be area 1 where they are likely to be accompanied by positive incentives.

C. Appropriate processing technology in cottage foods

Nonthakot et al. (2008) found that most housewives' groups operate at a high level of technical efficiency. However, a seemingly surprising result of their study is that the provision of processing equipment to housewives' groups by the national government had no significant positive effect on the production frontier. Perhaps this is not such a surprising result. Observations recorded during their survey work revealed that many housewives' groups did not use the modern machinery or equipment provided by the government because either they did not know how to use it or it did not suit their needs. They were still producing their products using traditional processing methods.

Knowledge support about how to use new equipment might increase the productivity of these groups, but it is important to be aware of the lag to adoption when providing new technology for housewives' groups. Pannell (2008) found that investment in extension (technology transfer, education, communication, demonstrations, support for community network) reduced the adoption lag.

The relevant policy domains are areas 2, 3 and 4 in Figure 2. There is a major facilitatory role in technology transfer to housewives' groups including production technology and technology management, suggesting that area 3 is likely to be the main policy domain where there are high payoffs to both private firms and the value chain as a whole.

D. Influence of business training

Housewives started to form their groups with social activity and have undertaken business activity in only the past ten years. Business skills and lack of working capital are restrictions that limit the growth of the housewives' groups, which frequently encounter management and marketing problems and lack of external support (Jantradech 2003). Business planning is an important skill to improve their business performance. Housewives' groups can learn how to manage production, marketing, finances and human resources from this planning. Furthermore, a business plan is a requirement for obtaining credit from financial institutions. Cooperation between local universities and housewives' groups can establish training courses in business planning to generate and transfer knowledge. This activity is situated in area 3 in Figure 2.

E. Facilitating and coordinating intense knowledge sharing

Nonthakot et al. (2008) found that the main level of cooperation among housewives' groups is at the provincial level, and marketing is only one activity in this cooperation. Encouraging cooperation between housewives' groups can help them to share experiences and knowledge, but understanding what influences the forms of cooperation between the groups has not been well established. Finding out which factors influence cooperation between housewives' groups needs further analysis.

F. Should housewives' groups develop their own brands?

Only 7 per cent of the housewives' groups in the study by Nonthakot et al. (2008) had contracted to produce cottage foods for exporters. If this proportion is to be raised, housewives' groups need to create a strong brand that is generally accepted further down the value chain. The creation of housewives-specific brands could be a powerful factor in the buying decision because it has both identification and qualification functions (Aaker 1991; Keller 2002). According to Falcone (2006), a strong brand can gain a value chain a competitive advantage over its rivals if the product is well-known and has a good reputation. Establishment of product certification convinces consumers to have confidence in cottage foods. However, brands only have value if there is uncertainty about the quality cues, for example if a customer cannot be sure what the quality of generic product will be. Branding adds value if it means that a customer or buyer further along the value chain could rely on the quality of a product with a particular brand to be consistent with what they desire.

A housewives' group's specific type of brand is not the only option for groups trying to tap into export markets. Groups can also supply cottage foods to larger private companies with established brands that wish to develop outsourcing arrangements. This might be a more profitable avenue to explore in developing own brands provided groups get appropriate equipment and training, and can maintain the quality of products

supplied (see above). Research is needed to evaluate the options of own-brand creation versus the supply of foods to larger firms with better access to export markets.

Concluding Comments

The primary objective of this paper is to outline and discuss the desirable policy, R&D and training directions for the cottage foods industry in Thailand. A discussion of the research implications established that a CRTCF for cottage foods would be an appropriate way to add chain value. The effectiveness of a CRTCF would be a fundamental concern to the national government, which implements a wide range of policies to improve the cottage foods value chain. The great challenge of activities in the CRTCF is linking emergent technology with emergent markets by using a variety of policies to enable housewives' groups to retain their competitive position in the value chain by improving quality control, the adoption of improved technology, and access to credit and appropriate training courses.

A policy of promoting strategic alliances is fundamental to improving the cottage foods value chain. The networks between housewives' groups and other alliance participants provide a basis for implementing desirable policy mechanisms. The CRTCF would provide the support to facilitate strategic alliances, thereby strengthening the competitive positions of alliance members. Furthermore, specific policy initiatives designed to assist housewives' groups could be implemented through the CRTCF.

Two related challenges facing those responsible for developing such strategic alliances are reconciling the different objective functions and size (and consequent market power) of those organisations comprising them. Effective chain governance is crucial, and heavily reliant on a team that is both skilled and experienced in business, and empathetic to national equity objectives. While we have stressed the key role of training household groups, it is unlikely to be the first training priority. That will be to develop the skill set of CRTCF employees to enable them to govern the chain in a competent manner.

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