



# The mutual influence of managerial ability and social networks of farmers on participation in an organic vegetable group in Khon Kaen province, Thailand

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## ABSTRACT

The main objectives of this study were to analyze farmers' managerial ability, social networks, and information sharing, and to describe the two-way relationship between managerial ability and social networks. We collected data through face-to-face interviews, using a structured questionnaire with a purposively selected random sample of 34 farmers in Khon Kaen province, Northeastern Thailand, in September 2013. All respondents belonged to an organic vegetable group. The findings revealed that almost all of the farmers have a high ability level in marketing, information searching, communication, and technical skills. Farmers with high ability, especially group leaders and group managers, have more chances to increase their networks through becoming consultants and transferring knowledge/technology. As a result, their social networks are more active and stronger, both inside and outside their villages. In addition, farmers with larger networks have more opportunities to assess information and exchange knowledge, so their ability can become even more effective.

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## Introduction

Organic vegetable production is an important economic activity for farmers in Thailand as it brings in an attractive income in a short time. The Thai government has encouraged farmers to grow organic vegetables as well as to form groups in order to increase their marketing power. However, owing to various problems and constraints, organic vegetable farmers have trouble producing enough to meet the high market demand. Previous studies have stated that organic vegetable growers have recently faced low vegetable production, lack of modern knowledge, and low-level management ability, such as in pest and marketing

management (Mondal, Haitook, & Simaraks, 2014; Mukiyama, Suphanchaimat, & Sriwaranun, 2014; Timprasert, Datta, & Ranamukhaarachchi, 2014). Moreover, the vegetable growers suffer from such difficulties as seasonal shortages of water, aging farmers, problems accessing capital, being too poor to enter the market, and low market values for their products (Andreas, Mizuno, Schad, Pakakrong, & Franklin, 2012; Jitsanguan, 2001).

Given the aims of promoting vegetable growers, improving their managerial ability is an appropriate solution. "Managerial ability" refers to a farmer's degree of capability in managing farm inputs (labor, land, and capital) and farm resources, including farm operations, to reach farm goals (Allahyari, Saburi, & Keshavarz, 2011).

However, improving managerial ability is not easy because it is commonly determined by a farmer's characteristics, such as age, educational level, farm experience,

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training programs, and source of labor (Lawrence, 2011; Nuthall, 2009; Yarmohamadi, Samani, Poursaeed, & Vahedi, 2014). In addition, previous research has shown that social networks promote improvement in managerial ability (Hoang, Castella, & Novosad, 2006; Isaac, Erickson, Quashie-San, & Timmer, 2007). For example, social networks play a pivotal role in farmers' decision-making about adopting new technologies (Matuschke & Qaim, 2009; Tatlonghari, Paris, Siliphouthone, & Suhaeti, 2012). Furthermore, Seeniang and Thaipakdee (2013) pointed out that it is necessary to consider how farmers/stakeholders share problems and exchange knowledge/experiences.

To the best of our knowledge, studies that discuss how managerial ability supports the formation of social networks are limited. Therefore, this study aimed: 1) to investigate farmers' managerial ability, social networks, and information sharing within their connected networks, and 2) to describe the mutual influence of managerial ability and social networks.

## Methods

### *Sampling and Data Collection*

The study was conducted in two sub-districts of Khon Kaen province—Wang Hin and Ban Han—where an organic vegetable group is located. The farmers' group had produced and sold surplus organic vegetables in both local and urban markets. The group consists of a group leader, group managers, and group members. Purposive random sampling was used to select the sample farmers. In all, 37 farmers who belonged to an organic group were listed as possible respondents. The list of potential respondents was obtained during a consultation meeting with the local people, including the group leader and the development officers.

We interviewed 34 farmers (92%) using a structured questionnaire in September 2013. The questions focused on farm management skills and the number of farmers' networks. Managerial abilities were assessed via a 5-point Likert scale, where 1 = very low ability, 2 = low ability, 3 = moderate ability, 4 = high ability, and 5 = very high ability.

Information on farmers' social networks can be obtained by asking farmers either "to name a maximum of three people with whom they often discussed agricultural decisions" (Matuschke & Qaim, 2009) or "to name an unlimited number of other people within their social network". For this study, we chose the second method, asking farmers to provide the number of people they frequently consulted and with whom they discussed agricultural issues. We believed this question would elicit more information about the exchanges between the farmers and other network members. After reviewing the literature and considering our options, we included the following two questions: (1) "To whom do you usually turn for agricultural information?" and (2) "What agricultural issues do you discuss within your networks?" in order to access the topics of information discussed within connected networks. The data derived from answers to the first question were used to analyze the social network.

### *Data Analysis*

Descriptive statistics (frequency and percentage) were used for the level of the farmer's managerial ability and frequency of discussions within the networks. To interpret the mean score of managerial ability, an interval scale was employed. Five rankings were set as follows: very low = 1.00–1.79, low = 1.80–2.59, moderate = 2.60–3.39, high = 3.40–4.19, and very high = 4.20–5.00. For the social network analysis, UCINET 6 for Windows Version 6.487 (Borgatti, Everett, & Freeman, 2002), was applied to draw farmers' networks.

## Results and Discussion

### *Socioeconomic Characteristics of Farmers*

The age of farmers ranged from 29 to 67 years (mean = 48 years) and the average farm size was 3.6 ha, with an average area of 1.7 ha for rice cultivation. The number of vegetable varieties planted averaged seven. The average household income was 233,133 baht per year, with approximately 75 percent of the household income of group members being generated from farming. Farm income was derived from selling rice, sugarcane, cassavas, fruit and vegetables, and livestock products.

### *Managerial Abilities of Farmers*

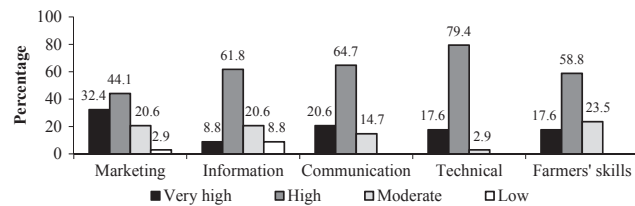
Figure 1 shows that about 59 percent of the respondents have a high level of managerial ability, implying that the major farmers have good skills in farm management. As farmers' participation in the organic vegetable group increases, they have more chances to increase their skills through training programs, learning from farming centers, and exchanging experience and knowledge among group members/connectors.

In addition, not only were marketing skills improved, but also information, communication, and technical skills were developed to increase farmers' marketing power.

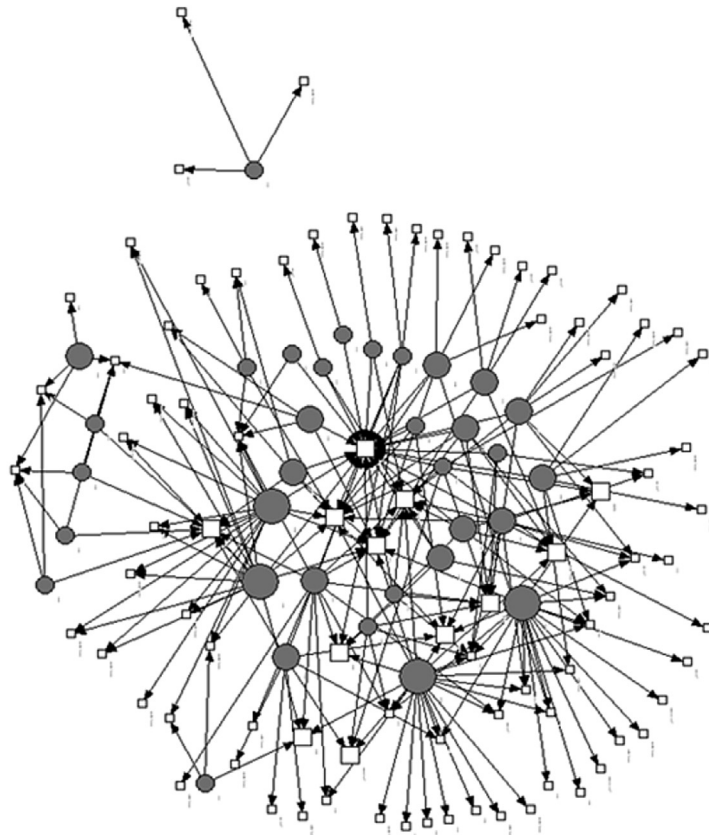
As a result, about 75 percent of the farmers in the study area have very high or high levels of marketing skills. Moreover, the results revealed that most of the farmers have high levels of technical skills (79.4%), communicative skills (64.7%), and information skills (61.8%).

### *Structure of Farmers' Networks*

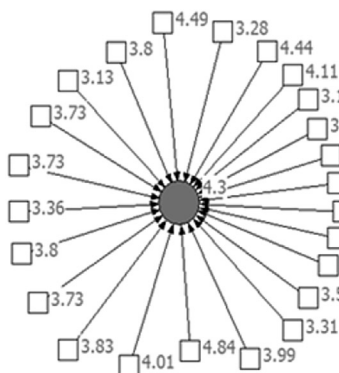
In Figure 2, the numbers refer to the number of connectors that the sample farmers usually meet to access and share agricultural information. Figure 2a shows that farmers with high managerial ability have larger networks than those who have low ability. They often connect with other actors, and other actors customarily consult with them. In particular, these farmers hold high positions within the farmers' group, such as head or vice-head and marketing manager. They also often meet with other group members to discuss agricultural conditions and problems, as well as with other farmers from nearby villages and the staff of farmers' organizations outside the villages (Totterdell, Holman, & Hukin, 2008).



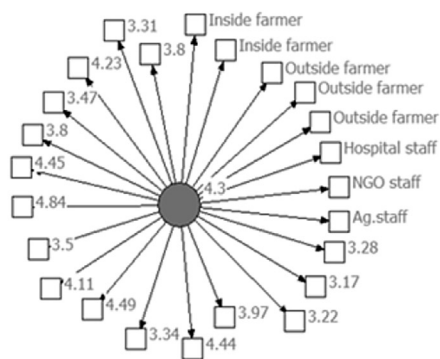
**Figure 1** Managerial ability of farmers towards farm management



**a. The structure of networks**



**b. Transferring**



**c. Accessing**

**Figure 2** (a) Social networks of farmer directly transferring; (b) and accessing; (c) agricultural information. *Note:* ● represent the farmers who participated in this study. □ represent other connected networks that the respondents consulted. (ex. □ 3.99 means group member)

**Table 1**

Information sources for farmers' agricultural information and number of times discussed in the group

Unit: numbers of times										
Discussion topic	Information source (n = 34)									Total
	GM	IF	OF	G	T	AG	H	U	NG	
1. Safely planting vegetables	69	10	24	3	1	15	—	—	2	124
2. Marketing management	23	4	5	—	1	2	—	1	2	38
3. Producing organic fertilizers, compost and manure	13	3	5	2	1	7	—	—	—	31
4. Farm management	13	5	3	3	1	3	—	—	—	28
5. Controlling pests and diseases	3	—	2	—	—	2	1	—	—	8
6. Rice productivity	—	—	1	—	—	7	—	—	—	8
7. Planting economic crops (e.g., sugarcane and cassava)	1	2	—	—	—	—	—	—	—	3
8. Safety using chemical herbicides and pesticides	—	—	—	—	—	—	2	—	—	2
9. Others	5	—	13	—	—	4	2	—	—	24
Total	127	24	53	8	4	40	5	1	4	266

Note: GM = Group member; IF = Other farmers inside village; OF = Farmers outside village; G = Local government officer; T = Teacher; AG = Agricultural staff; H = Hospital staff; U = University staff; NG = NGO staff

The farmers holding high positions usually acquired more experience and technical skills than those who did not hold such a position. In addition, the high-ability farmers frequently sought out new techniques and information to better develop their farms, whereas the other farmers waited to see the benefits of new techniques/technologies before deciding to adopt them.

#### *Network Structure of Farmers with High Managerial Ability*

The farmers with high ability scores attracted many networks within their group (Figure 2b). One reason for this was that these farmers were more confident in their investment in farm products and in learning from collective activities. In addition, high-ability farmers were willing to encourage other farmers to develop their farms and improve their management skills, so they often discussed and transferred their knowledge to other farmers or neighbors. Moreover, if farmers with low managerial ability experienced any problems during the growing season, they preferred to consult with farmers possessing high knowledge and ability. The farmers believed these networks to be sufficient to solve any problems. This result confirmed the finding of Isaac et al. (2007), who stated that farmers who lack the knowledge to manage agricultural resources often rely on information obtained from their local social networks.

In the case of high-ability farmers, Figure 2c shows that these farmers not only transferred information to encourage other connectors but also had more opportunities to expand their networks for accessing and learning about information, new knowledge, and modern technology, both inside and outside their communities. The networks of farmers with high ability consisted of agricultural, university, hospital, and NGO staff; teachers; farmers inside and outside the village; and the farmers' group members. These linkages promoted farmers to improve their managerial ability at the high ability level.

#### *Information Sharing Topics Within Connected Networks*

The topic most discussed by farmers within their social networks (Table 1) was the safe planting of vegetables (124

times), followed by marketing management (38 times), and producing organic fertilizer, compost, and manure (31 times). In their social networks, farmers usually consulted with other community farmers daily, and they usually contacted government officers. Farmers both inside and outside the villages were the primary contacts for all farmers in the study area because they relied on their local social networks to access information and felt most comfortable discussing agricultural matters with other local farmers. This finding suggests that local residents have a better understanding of current farming conditions than do people from outside (Isaac et al., 2007).

#### **Conclusion and Recommendation**

Most farmers in the study area had a high ability level in farm management, and this managerial ability helps them in forming wide networks. In particular, high-ability farmers are becoming the centers of connected networks among farmers in the local community in terms of transferring information and technology. In addition, inside their networks, the farmers have opportunities to learn and improve their ability through information sharing and exchanging experiences/problems.

Based on the findings, the idea of farmer-to-farmer learning and information exchanging within networks should be disseminated to other groups and/or communities in order to improve farmers' managerial ability and to make it easy for them to access information.

Though almost all of the farmers have a high ability level, some farmers have a low level of marketing and information searching skills. This issue lays the groundwork for future studies to address such questions as "Why do some farmers have low ability?" and "What are their problems and constraints?". Such information will benefit policymaking and implementation in agencies that aim to improve programs and strategies for further development policies.

#### **Conflict of interest**

There is no conflict of interest.

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