

# Capacity Enhancement for Agricultural Workers in Mangosteen Product

Cholpassorn Sitthiwarongchai, Chutikarn Sriviboon

**Abstract**—The two primary objectives of this research were (1) to examine the current knowledge and actual circumstance of agricultural workers about mangosteen product processing; and (2) to analyze and evaluate ways to develop capacity of mangosteen product processing. The population of this study was 15,125 people who work in the agricultural sector, in this context, mangosteen production, in the eastern part of Thailand that included Chantaburi Province, Rayong Province, Trad Province and Pracheenburi Province. The sample size based on Yamane's calculation with 95% reliability was therefore 392 samples. Mixed method was employed included questionnaire and focus group discussion with Connoisseurship Model used in order to collect quantitative and qualitative data. Key informants were used in the focus group including agricultural business owners, academic people in agro food processing, local academics, local community development staff, OTOP subcommittee, and representatives of agro processing industry professional organizations. The study found that the majority of the respondents agreed with a high level (in five- rating scale) towards most of variables of knowledge management in agro food processing. The result of the current knowledge and actual circumstance of agricultural human resource in an arena of mangosteen product processing revealed that mostly, the respondents agreed at a high level to establish 7 variables. The guideline to developing the body of knowledge in order to enhance the capacity of the agricultural workers in mangosteen product processing was delivered in the focus group discussion. The discussion finally contributed to an idea to produce manuals for mangosteen product processing methods, with 4 products chosen: (1) mangosteen soap; (2) mangosteen juice; (3) mangosteen toffee; and (4) mangosteen preserves or jam.

**Keywords**—Capacity Enhancement, Agricultural Workers, Mangosteen Product Processing.

## I. INTRODUCTION

IN order to boost Thailand's economy from its grassroots, the enhancement of capacity of local human resource appears necessary. This will lead to capacity enhancement of each community within and outside their network, using their different and unique wisdoms and characteristics. Agricultural products are heavily industrialized in the form of agro food processing and exporting. The industry has promoted the national economic growth expanding investments and increasing labor market demand, reducing trade deficit, and increasing value added products.

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Nevertheless, productivity has been discouraged due to some limitations on raw materials and new and quality production methods as well as a lack of managerial skill and knowledge of small and medium entrepreneurs. The productivity is also confined within the problems of restricted product styles and designs as well as weak product branding, high labor cost and ineffective information technology. In terms of human resources, lack of skilled labor and those who have knowledge of management and marketing, as well as knowledge of relevant laws and regulations applied in import and export trades of the agro products [1].

Mangosteen is one of the tropical fruits of Thailand that is exported to other countries such as China. However, farmers who run mangosteen orchard businesses are facing lower profitability due to low prices for their crop [2]. In regards to enhancing the capacity of farmers in mangosteen production, it appears necessary to have a knowledge management (KM) system to work toward sustainability.

## II. LITERATURE REVIEW

The Eleventh National Economic and Social Development Plan of Thailand B.E 2555 - 2559 (A.D. 2012 - 2016) was formulated during a period when Thailand was encountering a rapidly changing environment that significantly affected the country. Moreover, Thailand will inevitably confront both internal and external changes that will be uncertain, complex and unpredictable. The country must be ready for those changes. The 11<sup>th</sup> national plan has shifted from industrial and economic development as the primary aim as in the previous years to the aim of development that embraces the concept that places people at the center of development (citizen- center or people- centered development) and promotes "balanced development" in all aspects. The philosophy of Sufficiency Economy has been adopted and applied to every segment of Thai society [3]. The goal is to increase the wellness and quality of living of the citizens while balancing among individual, society, economics, technology and environmental needs while working toward sustainable development. The country is thus directed to utilize the following assets in order to reach the stated goal: (1) to create a society of quality by building the intellectual basis for generating resilience in citizens and in society; (2) to achieve a green economy where knowledge and Thai identity will be used to restructure the economy based on innovation and value creation; (3) to connect effectively with the regional and global economies; (4) to foster sustainability in the agricultural sector and prosperity in the food and energy sectors; (5) to sustainably

manage natural resources and the environment; and (6) to reinforce good governance and harmony in all sectors and at every level. The accomplishment of these objectives will lay the foundations for a balanced and sustainable development and lead to a just and happy society [3].

In order to develop people towards professional skill and a stable life, human resource development should focus on how to enhance the competency of labor in different professions to match with existing and future demands in labor market. This can be done by fostering a learning environment with factors conducive to continuous lifelong learning among people. Furthermore, local production should be developed within its capacity as well as enhancing higher capacity by utilizing local identities, local idea and wisdom and modern knowledge with knowledge management technique and technological advancement.

The National Education Act of B.E. 2542 of Thailand states the importance of education to help mobilize human resources in the community. Members in local communities should be participating in education by contributing their experience, knowledge, expertise, and local wisdom to their communities' benefits relevant to particular needs and problems solving [4]. Thailand is a country with strong agriculture production generated by wisdom imparted through generations. Values of traditional cultural assets and identities related with agriculture must be conveyed to individuals in local communities so that these assets can be recognized and combined with current innovations and technology. These assets can be then become more productive. All these efforts of value creation based on knowledge and innovation should contribute to self-sufficiency and poverty reduction.

In accordance with the stated will, local production is considered a significant root of Thailand's economy, in which local human resources play a vital role. Mangosteen is one of the tropical fruits having been exported to other countries such as China, generating revenue to the country. However, farmers who run mangosteen orchard businesses are facing less profitability due to low prices [2]. In regards to enhancing the capacity of farmers in mangosteen production and having alternatives, it appears necessary to have a knowledge management system (KM) to work towards sustainability.

In a study by Saksorn Mongkol-itthavet [5], concerning the process of community capacity development towards community happiness using the case of Baan Sobyab (Sobyab Village), Chiang Saen District, Chiang Rai Province. The result stated that in order to strengthen the community to increase its capacity, the community members needed strong relationships and a lending- a- hand culture, virtue of traditions and local wisdoms as the community's assets, and leadership skills. Moreover, all members should have the opportunity to be involved in the process of analyzing problems based on needs of their own community before brainstorming for potential solutions. Paritta Chalermphao Khoanantakul [6] stated that a way of competing and even moving confidently along with the rapid pace of the globalization was that each local community

should realize the value of its culture especially traditional culture that strongly defines the community's identity. Furthermore, the community shall apply the concept of knowledge management to manage and transform their cultural value to the knowledge body unique and beneficial to that particular community in terms of productivity and problem solving, working with ownership attitude, participation of the members and knowledge sharing must be implemented with directions. This practice coincides with the concept of people- centered development.

### III. METHODOLOGY

The population of this study was 15,125 people who work in the agricultural sector of mangosteen production, in the eastern part of Thailand that included Chantaburi Province, Rayong Province, Trad Province and Pracheenburi Province. The sample size based Yamane's calculation [7] with 95% reliability, was therefore 392 samples. A mixed method was employed in which both a questionnaire and a focus group discussion based on Connoisseurship Model were used in order to collect quantitative and qualitative data. The questionnaire using five Likert rating scales was designed into 4 main parts to acquire the respondents' demographic data and opinions towards the actual circumstances and expectations of knowledge management for agro food processing, as well as opinions towards guidelines or directions in developing professional competency for mangosteen product processing. The focus group was based on the discussion among the key informants. This group included agricultural business owners, academic people in agro food processing, local intellectuals or local academics, local community development staff, OTOP subcommittee, and representatives of agro processing industry professional organizations. The group discussion was designed to evaluate ways to develop new knowledge to enhance the capacity of agricultural workers.

### IV. FINDINGS

Demographic findings revealed female respondents counted for 70.41% and male for 29.59%. The majority of the respondents (40.56%) were between the age of 36 and 45, followed by those who were between 46 and 55 (29.59%), with the highest percentage of them were married (83.93%). The education level was almost balanced between primary school or lower (42.60%) and secondary school or vocational (39.80%). Moreover, the findings reported that the respondents' year of experience in agro food processing shared similar percentage between 5-9 years (32.40%) and more than 9- 15 years (34.18%).

In order to examine the current knowledge and circumstances of human resources in the arena of mangosteen product processing, mean and standard deviation were used in evaluating the level of agreement ranking of the respondents towards agro food processing. The knowledge was classified into 7 variables shown in Table I. It was found that most respondents agreed at a high level to all 7 variables:

knowledge management, knowledge of agro food processing, perceived benefits of knowledge management, perceived benefits of knowledge about agro food processing, perceived benefits of professional competency, perceived benefits of adopting knowledge into work, and willingness to adopt knowledge of professional competency of agro food processing into practice.

TABLE I  
LEVEL OF AGREEMENT TOWARDS AGRO FOOD PROCESSING KNOWLEDGE  
MANAGEMENT VARIABLES

	<i>Mean</i>	<i>S.D.</i>	<i>Rank</i>
1. Knowledge management	3.75	0.729	High
2. Knowledge of agro food processing	3.59	0.803	High
3. Perceived benefits of knowledge management	3.73	0.794	High
4. Perceived benefits of knowledge about agro food processing	3.74	0.765	High
5. Perceived benefits of professional competency	3.70	0.802	High
6. Perceived benefits of adopting knowledge into work	3.67	0.743	High
7. Willingness to adopt knowledge of professional competency of agro food processing in to practice	3.72	0.769	High
Overall	3.70	0.779	High

Table II illustrates the comparison between the actual circumstance and expectation of the respondents towards the knowledge management variables. The findings of this part were utilized in evaluating ways to develop a body of knowledge in order to enhance the capability of the human resources in mangosteen product processing. The findings revealed that the respondents had agreement towards agro food processing knowledge management variables ranked at a high level, with a high willingness in knowledge sharing and high expectation for receiving knowledge sharing experience.

TABLE II  
ACTUAL CIRCUMSTANCE AND EXPECTATION OF RESPONDENTS TOWARDS  
KNOWLEDGE MANAGEMENT VARIABLES

	<i>Actual Circumstance</i>		<i>Expectation</i>	
	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
1. Individuals' willingness to share tacit knowledge within the community	3.72	0.823	3.92	0.599
2. Willingness of all members in the community to share tacit knowledge to each other	3.46	0.824	3.91	0.606
3. Having a stage for knowledge sharing to contribute explicit knowledge	3.37	0.786	3.84	0.676
4. Knowledge accessibility for community members	3.37	0.802	3.91	0.640
5. Individuals' capability in constructing the body of knowledge on their own	3.37	0.824	3.92	0.567
6. Variety of media and channels in empowering the members to construct the body of knowledge on their own	3.32	0.842	3.83	0.563
7. Ability of members to utilize media and channels in constructing the body of knowledge on their own	3.30	0.797	3.83	0.565
8. Availability of systematic and efficient steps of knowledge management	3.37	0.760	3.84	0.601

9. Availability of appropriate knowledge transfer and storage	3.46	0.833	3.88	0.558
10. Simple knowledge retrieval system	3.45	0.758	3.88	0.561
11. Availability of secure database for gathered knowledge	3.45	0.844	3.85	0.623
12. Availability of various knowledge storage systems with simple knowledge retrieval system	3.29	0.817	3.91	0.598
13. Identical standard of all knowledge storage systems	3.27	0.885	3.90	0.633
14. Simple language and communication used in organizing knowledge	3.41	0.804	3.92	0.616
15. All members' participation in knowledge codification and refinement	3.39	0.839	3.90	0.624
16. Consistency in updating knowledge content	3.42	0.796	3.92	0.626
17. Efficiency of knowledge storage in the knowledge bank	3.41	0.737	3.93	0.592
18. Benefits and utility of knowledge storage in the knowledge bank	3.44	0.668	3.90	0.586
19. Availability of knowledge sources with easy acquisition	3.41	0.885	3.86	0.631
20. Variety of knowledge learning sources	3.40	0.767	3.97	0.606
21. Ability of members to access all types of knowledge sources	3.38	0.850	3.92	0.576
22. Provision of motivating members to access knowledge by uses of various channels	3.46	0.759	3.94	0.534
23. All members utilizing various ways in accessing knowledge	3.42	0.756	3.90	0.536
24. Members sharing knowledge among each other	3.51	0.704	3.92	0.558
25. Benefits of shared knowledge to both giver and receiver	3.50	0.830	3.95	0.533
26. Creativity initiated after sharing knowledge	3.46	0.756	3.93	0.523
27. New body of knowledge constructed after sharing knowledge	3.47	0.808	3.95	0.552
28. All members learning by different methods	3.54	0.772	3.91	0.652
29. Members adopting knowledge in their works	3.52	0.736	3.94	0.560
30. Benefits of acquired knowledge in solving problems of the members	3.44	0.684	3.97	0.595
31. Benefits of acquired knowledge in solving problems of the community	3.56	0.729	3.88	0.589
32. Benefits of knowledge management to the community	3.62	0.689	3.94	0.587

The guideline to develop the body of knowledge in order to enhance the productivity of the agricultural workers in mangosteen product processing was delivered in the focus group discussion by key informants including agricultural business owners, academic people in agro food processing, local academics, local community development staff, OTOP subcommittee, and representatives from the agro processing industry professional organizations. The discussion focused on gathering experience and knowledge from the community members, with guidelines given by academics, resulting in a project called "Lessons Learned" to be initiated for training the community's members on how to produce their products at most productivity and profitability. In addition, they used discussion on the behavior of the community's members including motivation, existing and potential obstacles that obstruct the productivity: knowledge accessibility, weather

condition, shortage of labor with a high level of knowledge and experience, knowledge management of techniques and equipments, and inadequate support from the government. Supporting factors bringing the capacity enhancement into practice for the community's members in agriculture were also brainstormed. The solutions were finally conferred and the discussion thereafter contributed to an idea to produce manuals on mangosteen product processing methods, with 4 products chosen: (1) mangosteen soap; (2) mangosteen juice; (3) mangosteen toffee; and (4) mangosteen preserves or jam.

#### V. DISCUSSION

The respondents showed their agreement towards agro food processing knowledge management variables ranked at a high level, with a high willingness in knowledge sharing and high expectation for receiving knowledge sharing experience being unveiled. This finding coincides with the studies of Saksorn Mongkol-itthavet and Paritta Chalermphao Khoanantakul [5], [6] which emphasize the importance of theoretical framework of community capacity, community involvement, community happiness and community analysis with high members' level of participation; all of which are implemented through three main activities including conducting research, capacity development and actual implementation.

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