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Marketing channels of chili in the Upper Northeastern Region of Thailand

Kanyarat Sukhawatthanakun

Marketing Major, Business Management Department, Faculty of Liberal Arts and Management Science, Kasetsart University (Chalermphrakiat Sakon Nakhon Province Campus), Sakon Nakhon 47000, Thailand

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Abstract

The number of chili cultivation areas steadily declined from 317,573 to 169,911 rais from 2014–2019; thereby, Thailand almost doubled the value of imported chilis and chili products. This study is helpful to understand better about chili farmers in the upper northeastern region, both their personal and agricultural production factors. Therefore, the researcher intended to identify the channel pattern and the marketing channel selection factors for fresh chilis and processed chilis in the upper northeastern region of Thailand. As a research instrument, 300 questionnaires were distributed to farmers in three provinces. The collected data were analyzed using descriptive statistics and inferential statistics by *t*-test and F-test. The results showed that many respondents were engaged in rice cultivation as their primary occupation and chili cultivation as a secondary source of income. The experience in chili cultivation was more than five years. The factors influencing the selection of marketing channels through intermediaries were convenience, speed of coordination, and buying quantity, at the mean of 4.51, 4.33, and 4.32, respectively. Furthermore, the hypotheses testing indicated a difference in the production factors, such as total production cost and productivity per crop cycle, resulting in the difference of almost all influencing factors towards marketing channel selection. On the other hand, the cultivated size area factor had no statistically significant difference at 0.05, neither overall nor individual factor.

Introduction

Thai people consume chilis in the form of fresh chilis, dried chilis, and ground chilis. Therefore, the exact market value in fresh chili consumption in the country is complex to estimate. In 2019, the export value was 4,256 million baht. The value of the exports was continuously increasing, mainly with processed products such as chili sauce. Meanwhile, the import value was up to 7,682 million baht. As a result, Thailand had nearly doubled

E-mail address: kanyarat.suk@ku.th.

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imported chili and chili products from China, India, and Myanmar. (Department of Agricultural Extension, 2020).

As shown in Table 1, the number of chili cultivated areas decreased continuously from 2014 to 2019, from 317,573 to 169,911 rais. The main reason was that the selling price of the product was not worth the cost and the length of growing time for chili, so farmers could not bear that risk. Hence, the researcher realized the problem from the mentioned data that Thailand had fallen into a risky situation with lower chili cultivation rates, causing Thailand to import chili and chili products in high quantities upsetting the trade balance.

The upper northeastern region of Thailand contains a large agricultural area in the country. Most Thai farmers plant rice only in the rainy season, from July to December. They have no income from August to December due to unemployment while waiting to harvest agricultural products. For this reason, King Rama IX advised farmers to plant chilis after the rice harvest to solve the problem of unemployment. The study area was the upper northeastern region consisting of Sakon Nakhon, Nakhon Phanom, and Kalasin provinces, with 2,161 farmers. The total area under chili cultivation was 3,262 rais (Sakon Nakhon 1,551 rais, Nakhon Phanom 2,061 rais, Kalasin 310 rais), and in many places, the exact amount was unknown (Department of Agricultural Extension, 2020).

The researcher undertook in-depth interviews with the head of farmers for initial information and found problems about the chili farming, and selling fresh and processed chilis through the local intermediaries. For example, the average selling price of big size hot chili in the upper northeastern region was approximately 18.56 baht/kg and small size chili was around 39.79 baht/kg. In comparison, the average selling price in Thailand was 35 baht/kg. and 51 baht/kg., respectively. The researchers also found that government agencies did not set the mid-price of fresh chili the same as with other agricultural products. As a result, Thai chili farmers have faced price fluctuation in each sale, and sometimes their income may not have covered the cost of cultivation.

As widely known, most agricultural product selling problems can be solved by marketing strategy, thus, the researcher sought to analyze marketing channels of fresh chilis and processed chilis in the upper northeastern region of Thailand. The main purposes of this research were: (1) to study the distribution and marketing channels of fresh chili and processed chili; (2) to examine the factors influencing marketing channel selection of fresh chili and processed chili; and (3) to investigate the differences of personal factors and production factors which influenced the marketing channel selection of fresh chili and processed chili. Consequently, the researcher aimed to apply marketing expertise with valuable research results of the study to generate problem solution suggestions.

Literature Review

Marketing Channels

Kotler and Armstrong (2016) defined a "marketing channel (or distribution channel)" as a set of entrepreneurs that supported a product available for use or consumption by the customer. Furthermore, a value delivery network consisted of the producer, suppliers, distributors, and, ultimately, customers who "partner" to improve the entire system's performance. Confirmed per Marshall and Johnston (2015), a distribution channel consists of interdependent entities aligned to products' ownership

Table 1 Chili cultivated areas of Thailand (2014–2019)

(Unit: Rai*)

Type / Year	2014	2015	2016	2017	2018	2019
1. Hot chili (small)	111,710	100,929	94,337	85,832	74,435	59,634
2. Hot chili (big)	169,401	135,201	128,126	119,105	107,521	89,126
3. Green chili	31,706	22,888	26,227	17,637	14,260	19,481
4. Goat chili	3,794	2,241	2,460	2,219	1,920	1,663
5. Bell chili	962	661	1,142	146	49	7
Total	317,573	261,920	252,292	224,939	198,185	169,911

Note: *1 rai = 0.3954 acre.

Source: Department of Agricultural Extension (2020)

transferring from producer to consumer or business user. The producer should understand the intermediary's contributions through physical distribution, transactional, communication, and facilitation functions. Consequently, Hooley et al. (2017) explained that the physical distribution network could be a significant asset, and a vast network could ensure convenience. Lamb et al. (2017) pointed out that a product could use several possible channels (direct or indirect) to reach the final consumer. When feasible, producers chose a direct channel to sell directly to customers, and producers might own stores to benefit more.

Agricultural Marketing Channels in Thailand

Agricultural marketing channels were related to activities in the agricultural market process carried out continuously regarding product and service movements from producers to the final consumers (Kohls & Uhl, 2002). There were three essential components, namely, farmers, intermediaries, and marketing duties. Moreover, Dent (2011) explained that the routes to market involve one or more types of intermediaries, such as wholesalers, distributors, dealers, brokers, aggregators, and retailers, or relied on influencers to shape customer preference or acted as specifiers or their behalf. The agricultural marketing system consisted of various parts of agricultural products, from the hands of farmers to different types of intermediaries until the products reached consumers (Thaksinavisut, 2003). Soratana (2005) drew attention to the fact that traders were classified by market levels based mainly on production and distribution in Thailand. Thus, traders could be divided into regional markets, local markets, and secondary central markets. In addition, Lertrat et al. (2011) presented the problems influencing the market and vegetable prices in Thailand as follows: (1) quality varied by season; (2) high shipping costs; (3) weight loss; and (4) production cost depended on the vegetable type, production pattern, management and season.

Relevant Research

The study revealed that the modern supply chain for fruits and vegetables was more efficient than the traditional supply chain for both (Bisen et al., 2018). Sahara and Minot (2015) concluded that farmers sold chilis to customers at an average distance of 5.95 kilometers from the growing area and had only one buyer per seasonal crop. Personal factors such as education, stock, experience in chili cultivation, and distances significantly differed in chili demand sales in supermarkets. In addition, direct sales of farm products had the highest profit margin, followed by sales through marketing channels from the aggregators to the retailers (Soepatini et al., 2018). The commercial contracts between farmers and traders, both traditional and supermarket, was just a verbal agreement, while the top issue of the traditional channel was pricing. In contrast, most farmers were motivated to sell products through supermarkets due to high prices, but the limitation was that farmers lack experience in modern trade channels (Sahara & Gyau, 2014). Furthermore, most farmers sold fresh chilis in greater number than dried chilis. The production factors such as farm resources and the ratio of the incremental product value to the buying cost per unit of the small, medium, and large farms had a significant difference (Jagtap et al., 2014).

Therefore, this study aimed to identify the chili channel and distribution pattern in the upper northeastern region to review the situation where no relevant research focused on this cultivated region. Interestingly, the research output was presented as a recommendation for related parties, useful for farmers, intermediaries, and government agencies to synergy to develop the marketing channel of chili.

Methodology

Participants and Data Collection

This study population included chili farmers in the upper northeastern region, and the total population was 2,161 farmers (Sakon Nakhon 885 farmers, Nakhon Phanom 1,077 farmers, and Kalasin 199 farmers). It was the researcher's intention to select the samples from the top three districts where there were the most farmers in each province, totally 300 samples. Then, the stratified sampling method was used; thus, the samples were calculated; Sakon Nakhon 123 respondents, Nakhon Phanom 149 respondents, and Kalasin 28 respondents, respectively. In addition, data were collected by random sampling technic with face-to-face interviews with the questionnaire.

Research Instrument

Questionnaire-based quantitative research was created under the research framework conceptualized by review concepts-theories and related studies focusing on marketing channels and distribution. The questionnaire was designed based on the research objectives by using open-ended questions, closed-ended questions, and rating scale questions, which were divided into seven parts: Part 1-Personal factors; Part 2-Production factors; Part 3-Distribution pattern, Part 4-Channel pattern; Part 5-Factors in selecting the sale of chili through the direct sales channel; Part 6-Factors in selecting the sale of chili through intermediaries' channel; and Part 7-Additional comments and suggestions**.**

Validity and Reliability

The drafted questionnaire was validated and evaluated by three experts, and the questionnaire was improved according to experts' recommendations. The 30 sets of questionnaires were distributed for testing in the first pilot (Perneger et al., 2014). The data obtained were analyzed using Cronbach's Alpha to test the reliability (Engel and Schutt, 2017). The result showed that Cronbach's alpha of "factors in selecting the sale of chili through the direct sales channel" was equal to 0.816 and of "factors in selecting the sale of chili through intermediaries channel" was equal to 0.896 (Nunnally, 1978).

Data Analysis

The data from 300 questionnaires were processed using statistical software. The data were analyzed using descriptive statistics such as Frequency, Percentage, Mean and Standard Deviation, and inferential statistics to test the hypotheses (Adams et al., 2007). The inferential statistics consisted of a *t*-test and a One-way Analysis of Variance.

Results

Personal Factors

Respondents were female (70.00%), aged more than 50 years (43.66%), and with a primary education level (83.67%). Their primary occupation was farming (98.33%), and the primary source of income was between 10,000–30,000 baht (49.34%). Meanwhile, their secondary occupation was gardening (97.67%), and the secondary source of income was between 10,000–30,000 baht (45.67%). The duration of chili cultivation was more than five years (65.67%); interestingly, most of them were not members of any farmer group (70.33%).

Production Factors

Respondents had a cultivation area of 0.75–1.00 rais (43.67%) by planting Chinda Super-Hot chili (49.54%), the production costs ranged from 10,000–50,000 baht (52.33%), using only one laborer (60.67%) to grow chilis, and the highest productivity per harvesting was 1,001–5,000 kilograms (47.67%).

Distribution Pattern

The fresh chili was the most common form of sale (69.33%), and if chilis were processed, all the respondents would process such to be dried chili product (100.00%).

Channel Pattern through Direct Sales

A large portion of the respondents could directly reach the consumers (47.83%). They sold chilis in the market in the province (100.00%), and the farmers who had their shops would have a stall in the fresh market (77.78%) by packing in kilograms per bag (66.67%).

Channel Pattern through Intermediaries

Most farmers chose to sell products through intermediaries because intermediaries sold and distributed products and services better on behalf of farmers (81.76%). Most of them sold products to 1–2 intermediaries (63.07%), which were local intermediaries (86.74%) and regular buyers (84.67%). The sale was sold by grade (49.74%), packed in 10 kilograms of plastic bag (41.23%). There was no market price survey before harvest time (79.00%), but farmers knew the price and marketing information from local intermediaries (95.08%).

Factors in Selecting the Sale of Chilis through Direct Sale

The mean value of the direct sale of the product

was at a very important level ($\bar{x}$ = 4.01). In determining the mean, the scores were ordered from top to bottom as follows: the quality of chili ($\bar{x}$ = 4.75), the quantity of market demand ($\bar{x}$ = 4.19), the quantity of product ($\bar{x}$ = 4.06), the location of the market place ($\bar{x}$ = 4.00), harvesting season of farmers ($\bar{x}$ =3.96), trading network ($\bar{x}$ = 3.81), the expertise in finding the market ($\bar{x}$ = 3.75), and sources of funding ($\bar{x}$ = 3.50).

Hypotheses Testing Result

The test result of differences in personal factors: age, education level, occupation, income, years of experience, and group member resulted in different marketing channel selection factors at a statistical significance of .05. Nevertheless, the difference in gender factor did not affect differently on marketing channels through intermediaries, both overall and individual aspects (Table 2). When considering the testing result of the difference in production factors, production cost, productivity per crop cycle, and the number of laborers had the different preferences on marketing channel selection factors. In contrast, the cultivated area factor had no statistically significant difference at .05, neither overall nor individual aspects (Table 3). Notably, the "Good commercial offers" factor was rated as the low mean ranking ($\bar{x}$ = 3.44); meanwhile, the factors of primary occupation, secondary occupation, production cost, and productivity per crop cycle showed very significant differences ($p < .001$).

Table 2 Summary of the hypothesis test for different personal factors resulting in different factors of the marketing channel selection (Case of sales through intermediaries)

Marketing channel selection factors	Personal factors of chili farmers								
	Gender	Age	Education level	Primary occupation	Primary income	Secondary occupation	Secondary income	Experience (Year)	Group members
Familiarity	0.210	0.518	0.055	0.656	0.118	0.206	0.042*	0.055	0.476
Credibility	0.272	0.891	0.392	0.552	0.238	0.112	0.076	0.392	0.769
Punctuality	0.975	0.754	0.033*	0.880	0.073	0.831	0.081	0.033*	0.043*
Buying quantity	0.656	0.043*	0.203	0.836	0.261	0.776	0.724	0.203	0.468
Good offers	0.642	0.451	0.103	0.000*	0.224	0.000*	0.749	0.103	0.091
Fairness	0.118	0.554	0.520	0.909	0.045*	0.217	0.846	0.520	0.521
Keep benefits	0.385	0.241	0.296	0.657	0.386	0.918	0.488	0.296	0.681
Relationship & Contact	0.558	0.162	0.574	0.318	0.007*	0.700	0.808	0.574	0.808
Speed on coordination	0.093	0.146	0.242	0.832	0.835	0.000*	0.279	0.242	0.405
Convenience	0.561	0.078	0.139	0.000*	0.567	0.988	0.833	0.139	0.017*
Overall	0.257	0.633	0.044*	0.286	0.053	0.443	0.346	0.044*	0.217

Note: *$p < .05$.

Table 3 Summary of the hypothesis test for different production factors resulting in different factors of the marketing channel selection (Case of sales through intermediaries)

Marketing channels Selection factors	$\bar{x}$	Production factors in chili cultivation			
		Cultivated areas	Production costs	Crop cycle productivity	Number of laborers
Familiarity	3.97	0.519	0.001*	0.307	0.023*
Credibility	3.95	0.678	0.105	0.005*	0.107
Punctuality	4.14	0.071	0.168	0.664	0.326
Buying quantity	4.32	0.164	0.338	0.297	0.307
Good commercial offers	3.44	0.154	0.000*	0.001*	0.154
Fairness	3.65	0.470	0.025*	0.041*	0.403
Keep farmer benefits	3.59	0.259	0.001*	0.011*	0.780
Good relationship & contact	3.78	0.353	0.007*	0.024*	0.855
Speed on coordination	4.33	0.184	0.013*	0.301	0.150
Convenience	4.51	0.170	0.380	0.738	0.010*
Overall	3.96	0.474	0.000*	0.019*	0.069

Note: *$p < .05$.

Discussion

Farmer Personal Factors

The finding was that farmers were older than 50. This more or less agreed with Yoskit et al., (2011), who found that chili farmers in the irrigation area had an average age of 49.52 years. However, it was not consistent with chili farmers outside the irrigation area, with an average age of 44.33. In Sahara and Minot's (2015) study, chili farmers in Indonesia had an average age of 45.79 years, mostly with primary education, and their primary occupation was farming. These results were also confirmed in the study of Wetchakama et al. (2016) where most chili farmers had completed primary school. Almost all farmers were engaged in agriculture as their primary occupation and cultivated chili as a secondary occupation. The average income from chili farming was between 10,000–30,000 baht, but this was not consistent with the study by Yoskit et al. (2011), who found that chili farmers had an income between 44,816–46,333 baht. This study found that most farmers had more than five years of chili cultivation, consistent with Sahara and Minot (2015), who reported that chili farmers in Indonesia had an average of 8.93 years of experience in growing chilis.

Chili Production Factors

The result was that farmers had 0.75–1.00 rais of chili cultivation area, which was not consistent with previous studies (Sahara & Minot, 2015; Sudangnoi & Pakdee, 2011) that reported an average chili cultivation area of 3.87, 8.30 rais, respectively. These outputs implied that farmers in the upper northeastern region used less cultivated areas than other areas. In addition, it was found that the highest number of laborers used for chili cultivating was only one person, so it did not agree with the finding of Yoskit et al. (2011) that the average labor input was 2.15 and 2.23 farmers in Chaiyaphum province.

Chili Distribution Pattern

The result was that sales of fresh chili were bagged (10 kilograms). When processed chilis were required, all farmers produced dried chili products. According to Jagtap et al. (2014), most farmers in Achalpur, India, sold a greater number of fresh chilis than dried chilis. Furthermore, Soepatini et al. (2018) reported that farmers in Indonesia sold fresh chilis through local intermediaries and consumers. In addition, Sahara and Minot (2015) found in a study that chili farmers in Indonesia sold chilis in packages or pouches.

Chili Marketing Channels

The result was that most farmers sold chilis through local intermediaries and sell to the same intermediaries every harvest. This result agreed with Wetchakama et al. (2016) that most farmers sold chilis to intermediaries in the community, and a small percentage of chilis were sold in the retail market. In agreement with Sudangnoi and Pakdee (2011), Yoskit et al. (2011), and Sahara and Minot (2015), farmers sold chilis to only one intermediary in each cycle. Contrary to the study by Utama (2010), organic vegetable sale was direct to consumers and not through intermediaries.

Chili Selling through Intermediaries

The finding was that most respondents valued the convenience of the intermediaries as the highest priority and preferred to receive a cash payment. This finding was consistent with Thaksinavisut (2003); Jantharangsu and Klangrahed (2016) that indirect distribution used an intermediary to play a role in distributing products and making products very accessible to customers. In addition, Uttama (2010) and Lertrat et al. (2011) reported that farmers require the cash payment condition as much as possible by selling organic vegetables through intermediaries.

Recommendation

Chili Farmer

The marketing channel strategy could lead to agri-business success by following essential steps: (1) Classifying the product quality for gaining more income, such as non-toxic chili can easily penetrate modern trade channels with value pricing sales; (2) Determining intermediary selection criteria, such as cash payment,

regular quantity demand, good commercial offer, reliability, prompt services, or contract farming offers; (3) Considering the shortest level of marketing channels for avoiding shrinkage or rotting, and choosing a suitable vehicle for the product quantity and convenient delivery; and (4) Implementing the production and marketing plan to drive the best outcome with other member group farmers for sustainability. In summary, farmers should be concerned with all activities to establish, develop, and maintain successful interactions with customers and other business partners.

Intermediary

The intermediary is the most important alliance to drive the growth of the chili business; thus, it should develop the commercial practice covering farmer requirements: (1) Dividing the group of farmers for individual business planning by chili species type, product grading, product quantity, or farming contract; (2) Sharing the marketing information such as forecasted demand, customer product requirement, or seasonal price trend; and (3) Extending the agri-business through modern trade, manufacturer, or exporter channels.

Government

The chili price fluctuation and low selling price problems occur because of few intermediaries. Therefore, the government should manage the central market and set the price guarantee policy or the mid-price as other agricultural products. Chili farmers also lack agri-business knowledge and up-to-date know-how. Thus, government agencies would train them in planting, post-harvest care, value-added product processing, marketing channels, and marketing promotion techniques.

Conflict of Interest

There is no conflict of interest.

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