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The Analysis of Distribution and Marketing Margin of Agricultural Products under Different Supply Chains in Korea: In Case of Chinese Cabbage

Lee, Jung Hee

Professor, Department of Economics, Chung-Ang University, Korea

Hwang, Seonghyuk

Vice Research Fellow, Agricultural Cooperative Economic Research Institute, Korea

I. Introduction

Because agricultural products are one of the indispensable goods which could maintain human life, Korean people show sensitive responses against price changes of agricultural products even though the percentage of agricultural products in family expenditure is gradually decreasing. Especially in times when the demand of specific agricultural products is concentrated or production of agricultural products has greatly decreased, skyrocketing prices of agricultural products become the main interest of the country. These agricultural products price changes occur basically due to market mechanism which tries to solve the disequilibrium in demand and supply. In other words, agricultural products price fluctuations frequently occur by invisible hand which tries to solve excess demand and supply problem of agricultural products through a means called price.

For the recent 10 years from 2003 to 2013, producer's price index of agricultural and marine

products in Korea increased 32.0%. On the other hand, consumer price index of agricultural and marine products has increased 48.8% at the same period, which showed that increasing rate of consumer price index was shown higher than that of producer's price index. Of course, it is quite reasonable as producer's price has increased, consumer price has increased with time lags. Problem is that consumer price has increased more than the price increase range at producing areas. In other words, there is a problem in that middlemen take more profits than the in the distribution process of additional profits. Regarding this phenomenon, many experts think there are reasons about this unreasonable agricultural product distribution structure in Korea.

Agricultural product distribution is composed of multi-stage distribution structure which passes through producer, local trader, wholesale market corporation, intermediate wholesaler and retailer. And, most players who are participating in the distribution in each stage have a characteristic that their scale of business is small. Therefore, agricultural product distribution in Korea is pointed out inefficient distribution structure with high costs because of this characteristic. In order to solve this problem, Korean government has been consistently pushed improvement policies of distribution structure such as distribution systematization, direct marketing and promotion of cooperative shipping at producing areas and etc. Nevertheless, it is questioned whether middlemen take excessive profits in some agricultural products like chinese cabbage, radish and onion due to big price spread between producer's price and consumer's price. According to Korea Agro-Fisheries & Food Trade Corp., farm selling price of one head of autumn chinese cabbage was 1,368 won (Korean currency¹) in 2010 when weather conditions were not good, but the consumer price was 4,343 won, which shows consumer price was 3.2 times more expensive than farm selling price. In case of onion, farm selling price was 431 won per kilogram but consumer price was 1,550 won per kilogram, which showed the consumer price was 3.6 times more expensive than farm selling price.

As it was examined at the above cases, difference between farm selling prices and consumer prices

¹ The value of one dollar (U.S.) is almost same as 1,000 won.

(marketing margin) were excessively big and argument about the appropriateness of marketing margin has risen. Generally, reason why marketing margins of agricultural products are higher compared with industrial products is the costs which are required for transportation, storage and packaging are high because of physical and biochemical characteristics of agricultural products.

Nevertheless, it is necessary to identify the reason about marketing margins that exceed the social norm. In order to clarify the reasons about high marketing margins, it is required to correctly measure and analyze marketing margins. Analysis and review about distribution costs play an important role in distribution improvement by giving the basis to judge inefficient factors in distribution. This distribution improvement enables farmer to get the appropriate and stable receiving price and income and also enables consumers to purchase agricultural products quickly and stably with reasonable prices.

Therefore in this study, countermeasures against marketing margin reduction and price instability are to be suggested by examining the distribution structure and analyzing the influencing factors on agricultural products marketing margin. But, the study of agricultural product marketing margin is not easy because each item has different distribution structure and related margins are very diverse. Therefore in this study, distribution costs are to be examined as the form of case study by selecting the items which become important in agricultural products distribution issues in the meantime.

Based on that dimension, chinese cabbage was selected as examining item. It is because chinese cabbage is the main raw material for kimchi which is one of the most important side dish. Kimchi is a traditional side dish for Korean people which must be in the diet menu because Korean people have to eat kimchi every day even if they don't have meat in the menu. Proportions of consumers who buy kimchi and eat are estimated from 10 to 20% and the rest consumers directly make and eat kimchi at home or receive from their relatives or friends. Accordingly, consumers show sensitive responses against price fluctuations of chinese cabbage which is the main raw material for kimchi. Additionally in the stance of farmers, farmers also show sensitive responses against prices fluctuations of chinese cabbage because chinese cabbage is the main income source. Price fluctuation is very severe

especially because the stabilization of chinese cabbage prices through shipping adjustment is difficult. Therefore, as farmers prefer vegetable garden sales to avoid this risk, distribution structure of chinese cabbage becomes more complicated and becomes the byword to be the typical high cost and low efficiency distribution structure. Therefore in this study, plans to reduce distribution costs are to be suggested in order that chinese cabbage distribution could become high efficiency and low cost distribution structure by examining the distribution costs in each stage through cases of chinese cabbage.

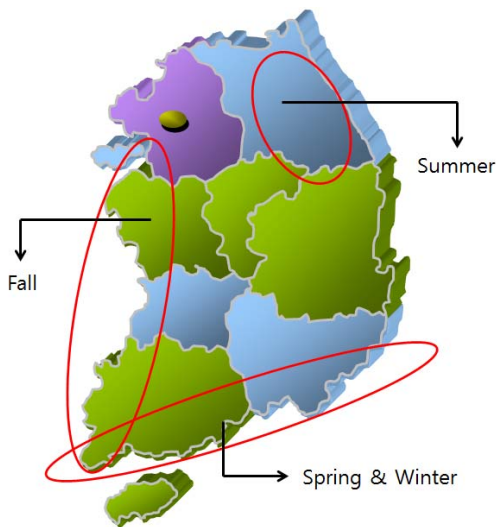
II. Current state of chinese cabbage distribution

1. Current state of chinese cabbage cultivation

Native habitats of chinese cabbage are known northern areas in China and coastal areas in Mediterranean Sea and chinese cabbage grows well in the areas with cool climate (20~25°C) all year round. Korean people started to eat kimchi with full-scale was after the time when the chinese cabbage with a head was imported from northeastern areas in China at the end of 19th century.

Chinese cabbages are classified into spring chinese cabbage (new cabbage), summer chinese cabbage(mountain area cabbage), autumn chinese cabbage(Gimjang- kimchi-making season- cabbage) and winter chinese cabbage(coming winter cabbage). Chinese cabbage is more affected by season and geographical features than other crops because it grows in the temperatures from 20~25°C. Chinese cabbage is cultivated at southern part of Korea where the temperature is maintained at 20~25°C in spring and winter season. Summer chinese cabbages which occupy 17% of chinese cabbage cultivation areas (5 year average from 2008 to 2012) are mountain area chinese cabbages and they are

greatly cultivated mostly at Gangwon-do areas which have much mountain areas. Because of low temperatures and less water evaporation at mountain areas in Gangwon-do, it is advantageous to cultivate crops. Autumn chinese cabbages are cultivated mostly at west coast lines.



Kinds (shipping time)	Characteristics
Summer chinese cabbage (Apr~Jun)	More water content than autumn chinese cabbage. Short storability
Summer chinese cabbage (Jul~Oct)	Mostly cultivated at the areas more than 600m high above sea level. Smaller than autumn chinese cabbage in size and proportion Cannot stored.
Autumn chinese cabbage (Nov~Jan)	Strong structural strength and good storability
Winter chinese cabbage (Jan~Mar)	Strong cold resistance and structural strength Good storability

Chinese cabbage is one of the most cultivated crops because it is the raw material of kimchi which is the most essential side dish to Korean people. Chinese cabbage was recorded as 16th ranked produced item based on the agricultural production in 2013 and it was identified as second highest produced item next to dried chilies in vegetables. Nevertheless, production of Chinese cabbage is

decreasing as kimchi consumption is decreasing due to the avoiding of young generation caused by the modernization of diet menu and the influencing trend toward health-conscious low salt food.

Looking at chinese cabbage cultivation areas for the last 10 years, cultivation areas are decreasing average 4.5% from 44,623ha in 2004 to 28,301ha in 2013. Additionally, chinese cabbage production volumes are decreasing annual average 3.0% from 2,865,485 tons in 2004 to 2,120,393 tons in 2013. Especially because of abnormally high temperature and typhoon in 2010, production areas rapidly decreased 17.6% and production volumes also decreased 29.5% compared with the previous year. Chinese cabbage production areas and production volumes showed decreasing trend because of aging of producer as well as temporary unusual weather phenomena.

<Table 1> Cultivation areas and production trends of Korean chinese cabbage

unit: ha, 1,000ton

Category		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	Areas	44,623	37,203	42,035	34,265	37,285	34,321	28,270	35,513	25,576	28,301
	Prod. Q'ty	2,865	2,325	2,749	2,217	2,585	2,529	1,783	2,681	1,816	2,120
Spring chinese cabbage	Areas	26,271	23,146	23,766	19,202	19,511	16,924	11,030	13,404	9,272	10,429
	Prod. Q'ty	1,237	1,067	1,144	941	929	807	427	565	379	454
Summer chinese cabbage	Areas	7,935	6,502	7,051	6,311	6,401	5,553	4,929	4,691	5,495	5,498
	Prod. Q'ty	313	254	281	253	247	211	137	144	203	201
Autumn chinese cabbage	Areas	13,858	11,001	14,368	12,178	14,693	14,462	13,540	17,326	13,408	15,095
	Prod. Q'ty	1,415	1,115	1,422	1,139	1,505	1,583	1,188	1,897	1,298	1,536
Winter chinese cabbage	Areas	18,336	16,644	16,715	12,891	13,110	11,371	6,101	8,713	3,777	4,931
	Prod. Q'ty	925	813	862	687	682	596	291	421	176	253
Green House chinese cabbage	Areas	4,494	3,056	3,901	2,885	3,081	2,935	3,700	4,783	2,896	2,777
	Prod. Q'ty	213	143	184	138	151	139	168	219	139	130

Source: Korean Statistical Information System.

2. Current state of chinese cabbage distribution

Core role of chinese cabbage distribution in Korea is executed by professional distribution organizations at producing area. It is because lots of labor is required for harvest and farmers are reluctant to direct chinese cabbage harvest because of high price fluctuation of chinese cabbage.

Because chinese cabbage has lower storability and high septicity compared with other crops and the harvest time is determined after seeding, it has a characteristic to harvest and sell at the same time. In other words, chinese cabbage cannot be shipped out by controlling harvest season according to market situations. If chinese cabbage harvest season is missed, the marketability is lost and therefore, it should be unconditionally shipped out to the market at harvest season. At this moment, if chinese cabbage supply is not sufficient, farm receives high price, but on the other hand, in case of oversupply, farm could have a situation that they have to sell the products at the prices less than production costs. Reason why chinese cabbage prices are shaking with big gap is chinese cabbage has price inelastic characteristic in its demand and supply. Especially when the chinese cabbage supply is insufficient under the situation where the chinese cabbage has a characteristics of indispensable goods, chinese cabbage price is soaring even against the small supply shortage because there is very few complete substituting crops for chinese cabbage. Additionally, lots of costs and labors should be input for direct production, collection and shipping and there are no farmers with that size that can pay those costs. Therefore, in order to avoid price fluctuation risk and to reduce the difficulty in harvest and costs burdens, farmers prefer to sell to local traders as vegetable garden trading after they plant the seeds at the field rather than to harvest and ship out.

Distribution organizations at chinese cabbage producing areas are divided at large into local trader, producer group(regional Agricultural Cooperatives) and agriculture corporation(agricultural association corporation, agricultural corporation). Local traders are in charge of most chinese cabbage distribution and in case of mountain area chinese cabbage, they are in charge of 75% of distribution volumes. Local traders are purchasing chinese cabbages from farmers mostly through vegetable garden transaction. Contracts between farmers and local traders are executed approximately 20 days

later when after seeding chinese cabbage seeds in the field. In other words, it is a kind of contract the farmer is liable for the production just for 1/3 of period and local traders are liable for the rest 2/3 periods and shipping. Generally, local traders make countrywide contracts with farmers in each cropping season to disperse the risk and secure the consistent production volume. In other words, they make contracts with farmers in order that they could harvest the chinese cabbages all year round from northern mountain areas to southern coastal areas. It is because if they secure large volumes through scaling, they could reduce fixed labor costs which are required for vegetable garden management, harvest and shipping. They solve the problems in small size chinese cabbage production and shipping with cultivation technology and shipping competitiveness through manpower and financial capability. They also solve the difficulty in vegetable garden management according to the aging of farmers by bearing production risk in favor of farmers.

Local traders ship out 70% of harvested chinese cabbage to wholesale market and the rest 30% to large volume buyers like kimchi factory. They keep the necessary volume through contract cultivation because stable secured volume is at the highest priority for large volume buyers. The case local traders directly buy chinese cabbages is that production decreases due to abnormal climate and etc and necessary volumes cannot be secured. Incoming chinese cabbages in wholesale market are transferred to intermediate wholesalers through auction. The company which is managing the auctions in wholesale market is called as wholesale corporation, and intermediate wholesalers who are affiliated to wholesale corporations play a role to deliver the awarded chinese cabbages in the process of auction to small size retail customers or large volume buyers.

Producer group (Regional Agricultural Cooperatives) creates regional organizations and buy agricultural products which are produced in the jurisdiction and ships out through Agricultural Cooperatives channels. Producer group purchase chinese cabbages from farmers mainly with 'Maechwi Method'. 'Maechwi Method' is a method to determine shipping time and prices in advance before planting the seeds and distribute additional profits (loss) between producer and regional Agricultural Cooperatives with fixed rates after harvesting and shipping the products. Regarding

distribution ratios, producer takes 70% and regional Agricultural Cooperatives takes 30% in case of profit, and producer takes 30% and regional Agricultural Cooperatives takes 70% in case of loss. In other words, 'Maechwi Method' has a structure that producer takes production risk and Agricultural Cooperatives takes price risk by taking the responsibility for the shipping by determining the selling price and selling to Regional Agricultural Cooperatives in advance before planting the seeds. In addition, they take calculation method before shipping and consignment type transaction method. Calculation method before shipping is a contract method of vegetable item Agricultural Cooperatives which can disperse the risk by purchasing chinese cabbages from various areas rather than from small size Regional Agricultural Cooperatives because Regional Agricultural Cooperatives is completely responsible for production and price risk. Consignment type method is gradually decreasing because producer should take both production and price risk.

Producer group ships out 70% of harvest volumes to large volume buyers (kimchi factory) and 30% to Agricultural Cooperatives wholesale distribution center and NonghyupHanaro Club (large size retail store operated by Agricultural Cooperatives) as the route shipping and to Garak wholesale market (The biggest wholesale market in Korea). Agricultural Cooperatives wholesale distribution center takes commissioned and consignment mode of transaction which is to calculate to regional Agricultural Cooperatives after deducting sales commission (4% of purchasing price) for purchased volumes from regional Agricultural Cooperatives and ship out to Hanaro Club after adding distribution commission (4% of purchasing price). At this moment, the price wholesale distribution center sells to Hanaro Club is determined by adding wasting rates and distribution commissions in the middle price of awarded price of wholesale corporation in Garak wholesale market. When awarded prices collapse, wholesale distribution center supports the prices of regional Agricultural Cooperatives and when prices soar, it ships out to Agricultural Cooperatives Hanaro Club with lower prices than awarded price.

Generally, agriculture corporation makes advance contract with large distribution companies and goes through the paths where the products are dispersed to each store through large distribution

company's distribution center. Agriculture corporation increases contract cultivation volumes when chinese cabbage price is increasing and takes vegetable garden 'Maechwi Method' when price is decreasing. Large distribution companies reduce direct management costs for local traders and farmer and put the price risk on intermediary vendors like agricultural corporation, agricultural association corporation and large-scale farmers by making contracts with them.

III. Current situation of agricultural product marketing margin and analysis of chinese cabbage marketing margin in each path

1. Concept of agricultural products marketing margin

Generally, agricultural product distribution is defined as "all economic activities which occur in the whole processes before agricultural products which are produced in farm are delivered to final customers".

Therefore, if the retail price of certain product can be divided into the price itself and the price for all values which are created in the process of distribution process, marketing margin can be defined as the price for all services which are provided in distribution process.

In other words, the value of marketing margin is the same concept with added value and it is distribution cost of each factor and distribution reward to distribution organizations. Size of marketing margin appears as price difference between final price paid by the consumer and collected price by a farmer. When that price is expressed as amount, it is called as absolute margin and when this margin is expressed as percentage of selling price, it is called as percentage margin.

From the viewpoints of individual management bodies, marketing margin can be divided into costs and profit at large and can be expressed as follows.

marketing margin = distribution costs + merchant profit

On the other hand, distribution costs are classified as direct costs and overhead costs. For example, costs of packaging, transportation, loading and unloading which are directly used in physical distribution process are direct costs and they are not much influenced by the increase and decrease of used volume and unit costs are relatively consistent. On the other hand, overhead costs can be reduced according to the increase and decrease of total used volume and examples are various costs including store rent, capital interest, communication, office administration, sales promotion, salary, store maintenance and etc.

Merchant profit can be divided into normal profit and excess profit. Normal profit occurs based on company's management capability, risk burdens and technological innovation and the excess profit is caused by specific production factors or monopolization of technologies, purchasing power or monopolization of market information.

Determinant factors of marketing margin are determined by general salary level, processing and distribution efficiency and competition states of distributors and etc. When the wage increases according to economic development, it gives pressure to marketing margin, but when the distribution efficiency increases according to the improvement of distribution method, all or part of wage increases can be all balanced. Therefore, when considering saving methods of marketing margin, each part of distribution costs as the composition factor of marketing margin and related quality of distribution service and distribution efficiency should be considered together and it should not be judged only with the size of marketing margin.

2. Current situation of agricultural product marketing margin

Agricultural product marketing margin is composed of direct costs like packaging cost, transportation cost, loading and unloading cost and listing commission which occur in the process of

distribution process, and the overhead costs which has the characteristics of indirect business management costs like store lease cost, interest cost, taxes and duties and etc, and finally the merchant profit. According to the research data by Korea Agro-Fisheries & Food Trade Corp., percentage of agricultural product marketing margin (agricultural product marketing margin divided by selling price) in 2012 was 43.9% and farm harvest rate was 56.1%. In other words, when consumer purchasing price was 1,000 won, farmers' receiving price was 561 won and a distribution cost was 439 won. Dividing 43.9% percentage of marketing margin into direct cost, overhead costs and profit, direct cost was 14.1%, overhead cost was 14.9% and profit was 14.9% respectively. In 2012 distribution costs, proportions of overhead cost and profit were highest.

Classifying 43.9% marketing margin into each distribution stage, shipping stage showed 9.1%, wholesale stage showed 12.1% and retail stage showed 22.7% and the proportion in retail stage was highest. Reason why distribution cost is high in retail stage is the big burden in store lease and wages and additional costs for repackaging due to small volume sale and goods loss and reduction.

<Table 2> Composition of marketing margin in Korean agricultural products, 2012

Category	Consumer paid price (100.0%)			
Average	farm receiving price(56.1%)		marketing margin(43.9%)	
Per cost	Direct-Overhead cost (29.0%)			Profit (14.9%)
	Direct (14.1%)	Overhead (14.9%)		
Per stage	shipping (9.1%)	Wholesale (12.1%)	Retail (22.7%)	

Source: Korea Agro-Fisheries & Food Trade Corp.

<Table 3> Composition changes of agricultural products marketing margin(%)

Category	2001	2005	2010	2011	2012
Percentage of marketing margin	43.7	45.0	42.3	41.8	43.9

Per cost	Direct cost	17.3	14.3	12.9	13.4	14.1
	Overhead cost	13.1	15.4	15.6	15.9	14.9
	Profit	13.3	15.3	13.8	12.5	14.9
Per stage	shipping	11.7	11.2	11.1	10.0	9.1
	Wholesale	9.4	10.2	7.9	8.6	12.1
	Retail	22.6	23.6	23.3	23.2	22.7

Source: Korea Agro-Fisheries & Food Trade Corp.

In <Table 3>, percentage of marketing margin after 2000 maintains approximately 40% and there are no big changes in marketing margin. This phenomenon means there is no big change in agricultural product distribution structure in our country, and repeated increase and decrease factors within certain levels can be understood as the changes in margin percentages resulting from annual price fluctuation. But in the composition of marketing margin in each stage, marketing margin in shipping stage shows decreasing trend and marketing margin in wholesale stage shows increasing trend. Wholesale stage in agricultural product distribution in Korea is mostly lags behind in regards of institution and facilities and therefore, it is the structure which is doomed to have high distribution costs. On the other hand, it is judged marketing margin in producing areas have decreased at shipping stage because of decreasing logistic costs resulting from systematization and scaling.

Like this, if composition factors in agricultural product marketing margin are known, related reasons can be identified, and regarding high margin portion, reasonable reduction can be approached. For this, follow-up survey should be made in each distribution path and according to stages ranging from production to consumption.

3. Analysis of chinese cabbage marketing margin in each path

3.1. Analysis method

For the analysis of marketing margin of mountain area chinese cabbage, structuralized

questionnaires were designed about the agricultural products distribution structure through the existing preceding studies and interviews with distribution path analysis team and people in charge in each channel. Using structuralized questionnaires, site follow-up surveys were made with one sample in each path and distribution costs were analyzed based on examined data. In case of route shipping a path, channel staffs in charge were interviewed in depth, starting from Gangwon A to producers, regional Agricultural Cooperatives, wholesale distribution center, Hanaro Club. For non-route shipping b path, c path and d path were also examined with the same method.

3.2. Comparison of marketing margin between route shipping and non-route shipping

Comparison results <Table 4> where the mountain area chinese cabbage marketing margins of route shipping(a path) and non-route shipping(b path) in Gangwon areas were compared showed the farm receiving price among the highest selling price was higher in a path(61.6%) than b path(37.7%). In other words, percentage of distribution margin was 38.4% in a path, 62.3% in b path, which showed distribution cost in b path was examined to be higher 23.0% than a path. Reasons why farm receiving price in a path is higher than in b path are two reasons at large. First, it is because producer in a path took more risk than in b path. It is because producer himself in a path was responsible for every production, and producer in b path made local traders responsible for the production for a certain period of time. Second, it is because of difference of mode of transaction between producer and shipping organization. Producer in a path obtained additional profit(23.1%) because he dealt with regional Agricultural Cooperatives with match shipping method and the price increased than the initial contract price. On the other hand, producer in b path made vegetable garden contract with local traders which are to transfer production responsibility and ownership 20 days after seeding.

Regarding the proportions of marketing margin in retail prices in shipping stage, a path was 26.7% and b path was 30.1% and distribution margin of a path was examined to have lower percentage. Looking at marketing margin amounts in shipping stage, regional Agricultural Cooperatives took

2,468.7 won of marketing margin per net in a path and local traders took 3,468.7 won of marketing margin per net in b path. When looking at the margin amount, local traders seems to take more margin than regional Agricultural Cooperatives in shipping stage, but marketing margin in b path was higher because local traders are responsible for production and consequently, the production cost was included in the margin. If 1,000 won of farming cost is deducted from local trader's margin in b path, it equals the margin, 2,468 won which is the margin took by regional Agricultural Cooperatives in a path. Eventually, whether the final chinese cabbage consumer price is high or low depends on the difference between wholesale and retail marketing margin and the price is determined by that difference.

Wholesale and retail marketing margin of a path(11.7%) was identified to be lower than b path in wholesale and retail marketing margin. Regarding selling prices, wholesale margin (sales commission+ distribution commission) was 7.4% and retail margin(Hanaro Club costs and profits) was 4.3%. In of b path, wholesale margin (listing commission in wholesale market + intermediate wholesalers operating cost, reduction, trash bags, overhead costs and profits) was 19.2% and retail margin(retailer's costs and profit) was 13.0%. Because a path is route shipping and consequently, it doesn't take overhead cost or profit except commission in wholesale stage, marketing margin percentage in a path was examined to be lower than in b path. In other words, reduction of marketing margin through Agricultural Cooperatives wholesale distribution center plays a role to decrease final consumer price. At the same token, Hanaro Club in a path is a retail distribution store operated by Agricultural Cooperatives and therefore, it could take lower profit than retailers in b path.It is interpreted as the result reflecting the characteristics of cooperative association which regards the cost management as main principle.

<Table 4>Comparison of marketing margin between route shipping

Category			route shipping ¹⁾ (a path) (13/8/30 shipping)		Category			non-route shipping(b path) (13/9/2 shipping)				
			Amount (won/net)	Proportion (%)				Amount (won/net)	Proportion (%)			
Producing area (Gangwon A area)	Producer	Farm contract price	3,555.5	38.5	Producing area (Gangwon B area)	Producer	Farm receiving price	4,333.3	37.7			
		Additional calculation amount	2,135.8	23.1		Producing areas distributors	Farming cost, Loading, Packaging, Equipments, Transportation, OHD & profit	1,000.0	8.7			
							Receiving price	7,802.0	67.8			
	Farm receiving price	5,691.3 ²⁾	61.6	Wholesale		Wholesale market	Listing commission	498.0	4.3			
	Regional Agricultural Cooperatives	Loading, Packaging, Transportation, Shipping commission	555.6 277.8 555.6 164.4		6.0 3.0 6.0 1.8		Awarded price	8,300.0	72.2			
						Additional calculation amount				915.3	9.9	intermediate wholesaler
							Receiving price	8,160.0	88.3			
	Wholesale	wholesale Logistics center	Sales commission ³⁾	340.0	3.7	Retail	retailers (traditional market merchant)	Costs & Profit	1,500.0	13.0		
			Distribution commission ³⁾	340.0	3.7			selling price	11,500.0	100.0		
		Supply price	8,840.0	95.7								
Retail	Hanaro Club	Costs & Profit	400.0	4.3								
		Selling price	9,240.0	100.0								

Notes 1) Regional Agricultural Cooperatives (8/10) which makes route shipping ships out chinese cabbages by consignment to wholesale distribution center after purchasing chinese cabbage with 'Maechwi Method'

2) Contract price was 3,556 won per net, but market price increased and consequently, final receiving price increased

through additional calculation.

- 3) Sales commission(4% of purchased price) was deducted and calculated in regional Agricultural Cooperatives, Provide to Hanaro Club after adding distribution commission (4% of purchased price)

3.3. Comparison of marketing margin between non-route shipping

Comparison results <table 5> of c path which is distributed to supermarket through local traders and wholesale market and d path which is distributed to mid-size supermarket through regional Agricultural Cooperatives and wholesale market show farm the receiving price is lower in c path than in d path. It is because producer in c path imposes a burden to local traders through vegetable garden transaction and producer in d path received additional profits from regional Agricultural Cooperatives through ‘*Maechwi Method*’.

Regarding proportions of wholesale and retail price in the final selling price, c path showed higher percentage(43.6%) than d path(30.6%). Especially, marketing margin of intermediate wholesaler was higher in c path than in d path and this is because retailer purchased mountain area chinese cabbage in small amount(approximately 15 nets) and finally, intermediate wholesaler sold after adding more profits.

<Table 5>Comparison of marketing margin between non-route shipping

Category			Non-route shipping(c path) (13/9/8 shipping)		Category			Non-route shipping(d path) (13/9/15 shipping)	
			Amount (won/net)	Proportion (%)				Amount (won/net)	Proportion (%)
Producing area (Gangneung C area)	Producer	Farm receiving price	4,333.3	34.7	Producing area (Gangneung D area)	Producer	Farm contract price	4,000	30.8
							Additional calculation amount	2,347.9	18.0
							Farm receiving price	6,347.9	48.8

	Local trader	Farming cost	1,000.0	8.0		Regional Agricultural Cooperatives ¹⁾	Loading	555.6	4.3
		Receiving price	7,050.0	56.4			Receiving price	9,024.0	69.4
Wholesale	Wholesale market	Listing commission	450.0	3.6	Wholesale	Wholesale market	Listing commission	576.0	4.4
		Awarded price	7,500.0	60.0			Awarded price	9,600	73.8
	intermediate wholesaler	Operating cost	222.2	1.8		intermediate wholesaler	Operating cost	222.2	1.7
		Selling price	10,500.0	84.0			Selling price	11,000.0	84.6
Retail	Retailer (village supermarket)	Costs & Profit	2,000.0	16.0	Retail	Retailers (mid-size supermarket)	Costs & Profit	2,000.0	15.4
		Selling price	12,500.0	100.0			Selling price	13,000.0	100.0

Note 1) Regional Agricultural Cooperatives (9/15) purchases and ships out chinese cabbage with 'Maechwi Method'.

VI. Problems and improvement plans of chinese cabbage distribution costs

1. Problems of chinese cabbage distribution costs

Highest proportion of chinese cabbage marketing margin is at the shipping stage. It is because operating costs for shipping are much required. Because there is no sufficient manpower as well as from local source, foreign workers are mostly used. Most foreign workers are colluding and this

produces high costs. Comparing marketing margins of local traders and regional Agricultural Cooperatives in shipping stage, marketing margin of local traders is higher. But, when just the incurred cost is considered which occurs purely in the shipping stage except production cost, distribution cost of regional Agricultural Cooperatives is higher because local traders are directly producing chinese cabbage as well. It is because local traders can get scale of economy effect resulting from scaling through country-wide vegetable garden transaction contract, but on the other hand, business areas of regional Agricultural Cooperatives are limited to relevant areas and therefore the business size is small, which cannot get cost reduction effect resulting from scaling.

Nevertheless from the aspects of farm receiving price, sales shipping method contract of regional Agricultural Cooperatives was examined to be higher than vegetable garden transaction method of local trader. And, it is necessary Agricultural Cooperatives actively take actions in chinese cabbage distribution because route shipping of Agricultural Cooperatives can reduce consumer prices. But, if this management method could bring big management loss to regional Agricultural Cooperatives when chinese cabbage prices collapse. Therefore, Agricultural Cooperatives passively deals with the contract because of the pressure about management loss and this makes local traders be in charge of most chinese cabbage distribution. Additionally, passive contract of regional Agricultural Cooperatives cannot achieve the scaling of business volume and this becomes a factor to increase ship-out cost.

Because chinese cabbage has low storability and marketability decreases very rapidly as times pass, it is important to harvest and disperse quickly. In this respect, disperse capability of current wholesale market to final consumers is very fast. Therefore, most of produced chinese cabbage is being distributed through auctions in wholesale market. But, various commissions(operating cost, transportation, listing commission, cleaning and etc) are increasing due to the aggravation of business results because wholesale market corporation is small and this increases distribution costs in wholesale stage. Additionally, small and poor intermediate wholesaler brings increasing transaction costs resulting from delayed auctions because of small amount purchasing by intermediate

wholesalers.

2. Improvement plans for chinese cabbage distribution costs

In order to provide higher receiving price to farmers by reducing chinese cabbage distribution costs and to sell at lower prices, Agricultural Cooperatives which is a producer organization should have efforts to participate more actively in chinese cabbage distribution. But, it is difficult for Agricultural Cooperatives to achieve distribution cost reduction effect resulting from scaling because of its limitation of areas. Therefore, the efforts are required to expand business size through the coalition between regional Agricultural Cooperatives.

Even though the coalition between Agricultural Cooperatives is theoretically easy, practical coalition between regional Agricultural Cooperatives is not easy because each regional Agricultural Cooperatives has different situations and entangled interests. Therefore, it is required for the government to prepare for the plan to provide incentives for the scaling through the coalition between Agricultural Cooperatives.

Labor cost, logistics cost and packaging cost are greatly affecting the increase of chinese cabbage price as well as chinese cabbage marketing margin and therefore, it is necessary to prepare for the countermeasures for this. And it is also require to increase the efficiency of manpower mobilizationthroughscaling of production and harvest because the increase of labor costs for production and harvest at producing areas is very big and securing the workforce is difficult as well. When chinese cabbage is put in the net, wasting rates is high and this becomes the cause of increasingdistribution costs. If this is put in the box, wasting rates decreases and logistic cost can be reduced through logistics standardization. However, it is quite expensive to operate modernized distribution facilities and therefore, ship-out size should be secured to reduce logistics cost. For this, cooperative shipping at the producing areas should be increased.

And, the efforts to reduce marketing margins should be more increased by constructing route

shipping system which is linking Agricultural Cooperatives wholesale distribution center and HanaroClub. As it can be seen at examined results, marketing margin through wholesale logistics center and Hanaro Club was relatively low and selling prices in Hanaro Club were also relatively low. Therefore, role and function of Agricultural Cooperatives wholesale distribution center are very important. As it is mentioned earlier, big volume should be handled in order to operate these facilities. In order to handle big volume by wholesale distribution center, it is important to find consumption clients which could take this volume.

Therefore, it is necessary for Agricultural Cooperatives to secure various markets like dining-out restaurants, medium and small distributors and big volume buyers and etc.

Additionally, development of observation system and distribution information system is required to reduce the chinese cabbage price fluctuation. Even though Agricultural Cooperatives likes to make match contract, they cannot take active action. And, in order to avoid price risk, farmers also hand over the risk to local traders as vegetable garden transaction. Because this risk is reflected in the costs, chinese cabbage marketing margin is relatively higher than other agricultural products. To reduce the chinese cabbage price fluctuation, it is necessary to make a system which could remove price uncertainty by providing observation information like production areas or harvest and correct price information. In order to increase the expansion of contract cultivation of regional Agricultural Cooperatives, settlement of contract culture is required and risk management plans according to contract cultivation by regional Agricultural Cooperatives are also required. Purchase through advance contract before harvest should respond to production risk due to unusual weather phenomena and price decrease risk when shipping. But, contract cultivation is difficult because of lacking risk management capability and responsibility issue resulting from the risk. Therefore, it is necessary for the government to prepare for the institutional base to expand the contract cultivation by Agricultural Cooperatives by strengthening the crop insurance for lowest price guarantee system and natural disaster and price decreases.

It is also require to promote the corporatization of local traders and to prepare for supporting plans

for producing areas scaling and stability of supply and demand through local traders in chinese cabbage distribution. And, the government should make an active consumer promotion in order that consumers shouldn't respond to chinese cabbage price increase sensitively. Promotion which makes recognize that temporary price changes could be stabilized as times pass.

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