

THE DEVELOPMENT OF AGRICULTURAL MARKETING INFRASTRUCTURE AND FACILITIES*

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I. Agricultural Marketing Improvement and Facilities

The marketing facilities are defined as the means by which marketing functions can be more easily performed. Marketing functions(activities), market channels (alternative product flows) and marketing firms (middlemen) constitute market system. The marketing facilities provide basic ground for performance of market functions, for determination of marketing channels and for behavior of market firms. Therefore, the marketing infrastructure and physical facilities are the hard-ware of marketing system. On the other hand, the operational technology and coordination are the soft-ware of the marketing system.

The marketing facilities, as the hard-ware of the system, have several dimensions in terms of effects on marketing, that is, location, kind, size, number, layout, etc. Each dimension of marketing facilities has different effects on marketing efficiency. The marketing efficiency is the most frequently used measure of market performance. Improved efficiency is a common goal of all marketing participants, such as farmers, marketing firms and consumers, and society.

In agricultural marketing system, we are concerned with two types of efficiency; technical (productive) efficiency and pricing efficiency.

Technical efficiency refers to the input-output relationships involved in the task of producing utility or gain throughout the marketing system. Agricultural product forms are changed, storage and transportation functions are performed, all the necessary economic activities are financed, and the product reaches the point of contact with the consumer. The performance level of marketing activities is the function of quantity marketed of commodity, level of manpower, level of facilities investment and technology. Among factors which determine the level of performance of activities, marketing facilities are able to determine size of activities which utilize the economy of size, utilization rate of full capacity and degree of adjustment of marketing activities to change in technology.

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Pricing efficiency is concerned with the ability of market system to efficiently allocate resources and coordinate the entire food production and marketing process in accordance with consumer's demand.

Competition plays a key role in fostering marketing efficiency. Degree of competition is defined by the marketing structure. In the short-run market structure it is influenced by the numbers, size and location of marketing infrastructure and physical facilities.

Increase in efficiency in marketing system means to improve marketing system. Improvement in market facilities and investment in the new facilities mean to enhance the efficiency of marketing system. Hard-ware development in marketing system as the development of agricultural marketing facilities and infrastructure puts step stone for marketing improvement and increase in efficiency of marketing system.

II. Efficiency of the Marketing Facilities

Agricultural marketing infrastructure/facilities have different kinds of facilities. There are rural markets such as periodic market, cooperative selling point and harbor consignment market, cold storage in producing area, packaging facilities for fruits, slaughtering house and packing plant. There are wholesale markets such as fruit and vegetable wholesale market, cooperative marketing center, wholesaler's shop, and commodity futures market. We have retail markets such as supermarket, chainstore, mama-papa shop, stall box and peddler. The marketing infrastructure and physical facilities also include processing facilities, sorting and grading facilities, transportation facilities, information facilities, the telecommunication facilities, parking space, sanitary facilities, waste disposal, office and related facilities. Some facilities have sub-component of facilities. For example, wholesale markets have sub-facilities such as auction hall, cold storage, parking space, ice storage, waste disposal, office, lounge, jobber's office, shop, etc.

All the marketing facilities mentioned above have the same characteristics; location, size, number, layout, and operation. The location of marketing facilities affects the distribution cost of product from the producing points to the facilities and from the facilities to the consuming points. The location which assures the minimum distribution costs depends on the size and number of the facilities, transportation condition and mode, urban site utilization plan, accessibility to the facilities, land price of the facilities site, etc.

As one of the location factors, the land price of facilities site has much influence on the rent of the facilities which is an important part of marketing cost of agricultural products because agricultural products are bulky and need ample site of facilities.

Accessibility to the facilities, another factors of location, determines

the degree of congestion around the facilities, which causes social costs of marketing activities.

Adequacy of the marketing facilities location can be measured by distribution cost, level of the rent and the degree of congestion.

The size is the most common factors for all the marketing facilities. The size of the facilities determines the operation costs of the facilities which is one of the most important components of marketing costs. The operation costs of the facilities will be minimized when the facilities have optimum size, are fully utilized and have perfect flexibility to change in technology.

The optimum size is determined at the minimum point of the long-run average operation cost. Estimation of the long-run operation cost of the facilities provides a criterion for the optimum size. Operation cost of the facilities can be easily surveyed from the existing facilities, but it is very hard to find out different size of the same kind of facilities in practice, especially of the big facilities such as wholesale market.

Full utilization might be tested if the marketing volume can not increase without increase in the average operational cost. Therefore, the full utilization is related to the short-run cost function. If the size of the facilities is designed to fit the peak season operation, the utilization rate of the facilities will be decreased in the off-season. The lack of operational technique is one of the factors for underutilization of the facilities. Mislocation, high rent and lack of related (complemental) facilities could be factors for underutilization.

Flexibility of the facilities provides divisibility or continuity of the marketing activities which smooths up the operation cost when technical progress takes a place. When the marketing volume increases beyond the size of facilities, the expansion of the facilities has to be easily done. The facilities should be designed to be able to be expanded, reduced and remodeled to meet technical process, and to adjust with the increase and decrease in marketing volume in the long-run. Flexibility itself needs costs, but the durability of facilities may recover the costs sufficiently.

The number of the facilities depends on total quantities marketed, size of facilities, geographical conditions, transportation conditions, the level and quality of consumer demand for market services, and operational technique. The number of the marketing facilities affects the degree of competition in the market because one unit of facilities is usually installed by a firm. Competition is the criteria for pricing efficiency in the marketing. Competition occurs among markets as well as among marketing participants. Retail market competes each other, wholesale market does each other and transportation facilities do each other. Too many numbers of the marketing facilities may offset the economy of size of facilities. Competition competes with the economy of size. Therefore, the optimum number of marketing facilities is one of the most important

factors for the improved efficiency of agricultural marketing.

The layout of marketing facilities is combination of the facilities, vertical and horizontal. The vertical combination of marketing facilities means linkage of the facilities in accordance with the marketing flow of the product. For example, in wholesale market, agricultural product goes through the process of unloading→display→auction→wholesaler's premises→retailing (out of wholesale market). The facilities then should have the combination of unloading facilities→display hall→auction facilities→hauling equipments→wholesaler's shop→loading facilities→shipping facilities to retailer, in order to minimize the material engineering costs for product flow through wholesale market. All the vertical combination facilities should be designed to be optimum size for market throughput with adequate speed.

Horizontal combination of facilities takes space of every kind of facilities. The wholesale premises is designed to locate the same product wholesalers together. Fruit wholesalers, vegetable wholesalers, fish wholesalers and livestock wholesalers are clustered in one wholesale market. The kind of sub-facilities, the assessment of space and ancillary facilities should be determined and designed in order to minimize the marketing costs.

The operation of marketing facilities is utilization technique and management ability for the facilities. Facilities themselves do not work for marketing but require operation and management by marketing participants. The operation and management institution and regulation as well as the marketing participants' technique and knowledge, which are another topic here, affect the efficiency of the marketing facilities and infrastructure.

III. Problems of the Existing Marketing Infrastructure and Physical Facilities

The marketing system should be examined to discover to what extent the marketing operations are carried out at the lowest cost. The first step is the identification of marketing channels, type, size and number of marketing participants, the volume marketed and the facilities utilized. The second step is the estimation of various costs such as transportation cost, rental cost, loss cost from product deterioration, pilferage and theft, transfer cost through the facilities. The transportation costs will be high if the marketing facilities are mislocated and if inappropriate transportation facilities including road, mode and size are used.

Rent will be high if the facilities site is very high in price. Usually the land price is closely related with the location and conditions of surrounding areas.

The transfer costs through the facilities include unloading, movement

into the facilities, movement within facilities such as sorting, assembly and preparation for shipment, and loading on to the buyer's vehicle.

The evaluation of marketing system should conclude with the identification of its major shortcomings and problems. (Then we can provide the solutions and remedies in the last chapter.)

This paper is going to present the problems and shortcomings of the agricultural marketing system, focussing on the wholesale market facilities. The major problems of the existing wholesale market may be directly related to inadequate market buildings, location, size and layout. The following deficiencies may be easily identified in the wholesale markets of developing country.

- (1) The existing wholesale market is too small in size to achieve the economy of scale.
- (2) Traffic congestion in and near the existing market, because of inadequate location of market in congested and residential area, and inadequate street and parking area.
- (3) Poor conditions of the marketing facilities: For example, acution floor without covers is bad facilities for traders in bad weather condition.
- (4) Imbalance among the market facilities may become a bottleneck for smooth marketing activities.
- (5) High rent for the market facilities due to the mislocation of wholesale market may be a factor which makes the appointed wholesaler have more interest in rental receipts than income from the efficient operation of the market.
- (6) Insufficient loading and unloading space and inadequate loading deck to fit the shipping mode.
- (7) Unsuitable building arrangement for storage and selling operation.
- (8) Poor sanitation and dirty premises arising from lack of such facilities and unsuitable layout.
- (9) High handling costs resulting from lack of appropriate facilities and inappropriate combination of the facilities.
- (10) Disorderly locating system of middlemen's store in the market building and poor grouping of market by commodity may impede the flow of produce through market.
- (11) Lack of competition due to a lack of supply concentration.
- (12) Lack of competition because of poor access for competing groups, such as farmers, truckers, middlemen and other trader to the market.
- (13) High price difference among markets because of small number of wholesale market.
- (14) Indivisibility and discontinuity of the market facilities due to a lack of flexibilities of the facilities.

- (15) High maintainance cost because of poor care about the marketing facilities.

In order to prevent and remedy the problems and shortcomings of the marketing facilities as mentioned above, some countries regulate the minimum criteria for the marketing facilities. The criteria may be sometimes limited, and impractical to adjust to the rapidly changing economic and social situation and rapid technical progress. Facilities requirements for wholesale market regulated by law are presented here as an example shwon in Table 1.

IV. The Development of New Market Facilities : Example of a Wholesale Market

1. The Optimum Market Structure Model

A model designed for use in determining the optimum number, size and location of wholesale markets must provide transshipment through intermediate points (wholesale market) between production areas and consumption areas. The basic transportation model allows product shipment only from points of origin to points of destinations. It does not provide for shipments through intermediate points to final destinations or for any processing at the intermediate points. The intermediate points can be the salughtering plants, wholesale markets or storage houses.

King and Logan (1964) applied a modified transshipment model to the problem of the optimum number, size and location of cattle slaughtering plants. In that study, consideration was given to the patterns of both raw and processed product shipments and to the economies of scales of processing plant. That model may be modified for application to the problem of determining the optimum structure for agricultural marketing system.

The model may be expressed as follows:

$$\text{Minimize TMC} = \sum_i \sum_j t_{ij} X_{ij} + \sum_i O_j X_j + \sum_i \sum_k c_{jk} X_{jk}$$

Subject to

- (1) $\sum_i X_{ij} = M_j$ for all j
- (2) $S_i = M_j - \sum_i (X_{ji} - X_{ij})$ for all i
- (3) $\sum_i X_{jk} = D_k$ for all k
- (4) $X_{ij}, M_j X_{jk} \geq 0$

Where

TMC = total marketing cost (transportation and operation cost)

X_{ij} = shipment from production area i to market j

M_j = marketing volume by market j

TABLE 1 FACILITIES REQUIREMENTS PER WHOLESALE MARKET OR COOP. MARKETING CENTERS FOR AGRICULTURAL AND FISHERY PRODUCTS REGULATED BY THE LAW IN KOREA

Facilities Required	Flower or				Fruit and Vegetables				Fishery				Livestock				
	Grain		Medicine		Cities with population of		Cities with population of		Cities with population of		Cities with population of		Cities with population of		Cities with population of		
	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	m ²	
Site	1,650	1,650	3,300	8,250	16,500	1,650	3,300	6,600	1,320	3,300	6,600	1,320	3,300	6,600	1,320	3,300	6,600
Building	660	660	1,320	3,300	6,600	660	1,320	2,460	530	1,320	2,460	530	1,320	2,460	530	1,320	2,460
Auction hall	500	500	990	2,480	4,910	500	990	1,980	170	990	1,980	170	990	1,980	170	990	1,980
Packing area	500	330	330	830	1,650	170	330	660	170	330	660	170	330	660	170	330	660
Cold storage						17	30	50	70	30	50	70	30	50	70	30	50
Ice storage						17	30	50	70	30	50	70	30	50	70	30	50
Waste disposal	30	30	30	70	100	30	70	100	30	70	100	30	70	100	30	70	100
Sanitary	30	30	30	70	100	30	70	100	30	70	100	30	70	100	30	70	100
Office	30	30	30	50	70	30	50	70	30	50	70	30	50	70	30	50	70
Supporting Facilities																	
	Lounge				Lounge				Lounge				Lounge				
	Information box				Information box				Information box				Information box				
	Storage				Chilled storage				Storage				Information box				
	Jobbers' shop				Jobbers' shop				Jobbers' shop				Chilled car (Airconditioned)				
	Jobbers' office				Jobbers' office				Jobbers' office				Jobbers' office				
	Others				Repairing room				Salting room				Others				
	Others				Others				Jobbers' shop				Jobbers' office				
	Others				Others				Jobbers' office				Others				

Source: The Law of Marketing and Price Stabilization of Agricultural and Fishery Products.

X_{jk} = shipment from market j to consumption area k

t_{ij} = unit cost of shipping product from production area i to consumption area j

O_j = unit market operating cost at market i

$O_j = f(X_j)$ for market economies of scale

c_{jk} = unit cost of shipping product from market j to consumption area k

S_i = supply in production area i

D_k = demand in consumption area k

Restrictions on shipments along certain routes also may be incorporated in the model by deleting activities. Shipments between production area and markets are prohibited by deleting the appropriate X_{ij} 's. Shipments between markets and consumption areas are prohibited by deleting the appropriate X_{jk} 's. Shipments along certain routes may also be restricted by inserting usually high costs in the objective function for the appropriate activities. Deletion of some activities is much to be preferred since it reduces matrix size.

The market operation cost is function of marketing volume. If the marketing volume increases, the operation cost decreases at first and increases beyond some level of marketing volume. If the marketing volume increases, the transportation cost increases because more volume comes in and out the market. Repeated experiment of linear programming model by computer may provide optimum size, number and location of wholesale market.

2. Optimum Market Structure and Investment in Korea

A. Estimation of Marketing Volume

The volume traded through the wholesale markets of cities with a population more than 200,000 inhabitants is estimated to reach 7,490,000 tons of fruit and vegetables, and 817,000 tons of fishery products by 1991, and 9,899,000 tons and 1,185,000 tons respectively by 2000 (Table 2 and 3).

In order to analyze the facilities required for the establishment of a public wholesale market in large cities, the statistics of the trade volume of products has been made with the following considerations. Among the total marketing volume of a consuming region, about 80% of fruit and vegetables, and 85% of beef and pork (including imported meat) are traded through the wholesale markets. In the case of fishery products, 60% of the marketed volume in a inland market region is shipped through the wholesale markets; the proportion is rather small due to the consignment sale of landing ports and the direct transaction of high-grade fish between fishermen and retailers or restaurants.

The selection of cities for the establishment of public wholesale markets has been made as follows. In the case of fruit and vegetables,

TABLE 2 ESTIMATION OF THE YEARLY TRADING VOLUME OF FRUIT AND VEGETABLES THROUGH PUBLIC WHOLESALE MARKETS OF CITIES SELECTED¹⁾

City	1991						2000					
	Population			Trade volume through wholesale market ²⁾			Population			Trade volume through wholesale market ²⁾		
	(thousand)	Fruit	Vegetables (1000 ton)	Total	Fruit	Vegetables (1000 ton)	(thousand)	Fruit	Vegetables (1000 ton)	Total		
Seoul ³⁾	13,184.6	984.0	2,749.1	3,733.1	15,912.4	1,535.8	3,283.6	4,819.3				
Pusan	4,481.4	317.7	787.0	1,104.7	5,432.1	498.8	946.6	1,445.3				
Taegu	2,457.4	169.6	447.7	617.3	3,016.8	269.7	543.4	813.1				
Incheon ³⁾	1,745.5	102.9	341.9	444.8	2,144.2	163.9	416.2	580.1				
Taejon	1,005.9	61.2	177.2	238.4	1,205.4	95.9	215.9	311.8				
Kwangju	970.5	69.5	186.1	255.6	1,142.6	106.0	216.2	322.1				
(Sub-total)	23,845.3	1,704.8	4,689.1	6,394.0	28,853.5	2,670.0	5,621.8	8,291.8				
Masan ³⁾	918.0	53.5	182.0	235.5	1,141.6	86.3	224.4	310.7				
Wulsan	695.0	40.5	137.8	178.3	898.6	67.9	176.7	244.6				
Suwon	460.9	29.6	81.3	110.9	570.3	47.4	99.9	147.3				
Chonju	481.0	34.7	75.6	110.3	561.2	52.4	88.3	140.7				
Chongju	388.8	24.3	56.9	81.2	475.2	38.5	69.9	108.3				
Pohang	331.5	22.4	65.7	88.1	427.4	37.4	84.0	121.5				
Chinju	289.7	23.3	55.5	78.8	352.4	34.9	66.7	101.6				
Yosu	269.4	12.3	43.4	55.7	316.9	18.9	52.2	71.1				
Mokpo	270.6	10.6	27.5	38.1	303.7	12.8	26.8	39.6				
Gheju	233.5	16.3	45.0	61.2	280.7	25.3	53.6	78.9				
Kunsan	222.5	13.0	44.1	57.1	263.1	19.9	51.7	71.6				
Kumi	—	—	—	—	259.4	22.7	45.2	67.9				
Iri	—	—	—	—	226.8	21.2	35.7	56.9				
Chunchon	—	—	—	—	215.3	13.4	33.6	46.9				
(Sub-total)	4,560.9	280.5	814.7	1,095.2	6,292.6	499.0	1,108.5	1,607.5				
Total ⁴⁾	28,406.2	1,985.3 (2,481.6)	5,503.8 (6,879.8)	7,489.1 (9,361.4)	35,146.1	3,169.0 (3,961.2)	6,730.3 (8,412.9)	9,899.3 (12,374.1)				
Whole Cities ⁴⁾	31,310.3	(2,714.6)	(7,517.8)	(10,232.4)	37,707.6	(4,234.9)	(8,986.4)	(13,221.2)				

1) Cities with a population more than 200,000 inhabitants in the given year.

2) Trade through wholesale market represents 80% of the total yearly marketing volume.

3) Seoul includes Songnam, Uijongbu, Anyang, Kwangmyoung, and part of Pucheon; Incheon includes part of Puchon; and Masan includes Changwon and Chinhae.

4) Figures in parentheses represent the total marketing volume.

TABLE 3 ESTIMATION OF YEARLY TRANSACTION VOLUME OF FISHERY PRODUCTS THROUGH INLAND PUBLIC WHOLESALE MARKETS OF CITIES SELECTED¹⁾

City	1991		2000		Cities & counties included
	Population	Trade volume of wholesale market ²⁾	Population	Trade volume of wholesale market ²⁾	
	(thousand)	(1000 ton)	(thousand)	(1000ton)	
Seoul	14,425.4	549.5	17,206.7	785.0	17
Taegu	2,886.4	93.3	3,278.3	129.2	8
Taejon	1,430.3	34.9	1,594.7	47.8	6
Kwangju	1,477.2	51.2	1,576.3	68.8	7
(Sub-total)	20,219.3	728.9	23,656.0	1,030.8	38
Suwon	1,643.7	35.1	1,910.8	49.1	9
Chonju	719.7	17.9	762.7	23.5	4
Chongju	807.9	15.9	822.2	20.1	6
Chinju	678.8	18.6	679.6	24.4	6
Kumi	—	—	593.9	16.8	5
Iri	—	—	344.6	10.2	2
Chunchon	—	—	413.2	10.0	5
(Sub-total)	3,850.1	87.6	5,527.0	154.1	37
Total ³⁾	24,069.4	816.5 (1,360.9)	29,183.0	1,184.8 (1,974.7)	75 75
Total inland areas ³⁾	28,077.8	(1,464.5)	31,725.1	(2,038.4)	102

1) The inland cities with more than 200,000 inhabitants are included and the port cities along the coast are excluded.

2) 60% of the total yearly marketing volume of fish and shell fish.

3) Figures in parentheses are the total marketing volume.

public wholesale markets are planned by 1991 to be established in 17 consuming areas such as Seoul, Pusan, Taegu, Incheon, Taejon and Kwangju. 24 cities among the total of 50 cities of the country will have wholesale markets.

B. Optimum Locations, Size and Number of Wholesale Markets in Major Large Cities

A large city (with a population more than 1 million (inhabitants)) has a wide consuming area and the function of the city has to be distributed to several places. Therefore, it is considered as desirable for a large city to have more than one wholesale market. To analyze the optimum marketing location, numbers and size of the new wholesale markets of large cities, experiments of linear programming transshipment model have been carried out for Seoul, Pusan, Incheon, Taegu, Taejon and Kwangju.

The model, as mentioned before, is a system to make decisions on the operation size, the incoming and distributing channel and volume of the proposed market site together with minimized transportation costs from the incoming points to the proposed market site, and from there to the consuming points, plus the market operation costs of the proposed

markets, while meeting the balance between the volume of incoming points and consuming points. If the average cost of market operations varies in accordance with the operation size, the numbers of the site in a city can be decided by repeated experiments of the model reflecting the cost variation.

For the model experiment, estimations are being made on the incoming volume of each incoming entrances from the actual research materials, and on the consuming volume of each geographical unit by calculating the numbers of people and restaurants. Several alternative market sites are proposed by taking the city planning and the network of roads into consideration. In regard to the costs of market operation, no appropriate functional system has been estimated due to the limitation of data, so that all the market locations are compared under the same condition regardless of their size of operation.

The following tables show the optimum locations, numbers and yearly transaction size of the wholesale markets of fruit, vegetables, and fishery products by 1991 and 2000, which is obtained through model experiments on the marketing network of Seoul, Pusan, Incheon, Taegu, Taejon and Kwangju (Table 4, 5 and 6).

C. Investment Requirements

The estimated marketing volume of each commodity groups can be converted into physical facilities under consideration of trading method, size of market, location, transportation mode and ancillary facilities. The physical facilities include access roads, loading and unloading facilities, auction hall, wholesalers' premises, storage, icemaking, ice-storage, cold storage, trucker sale facilities, parking space, administrative office,

TABLE 4 PROPOSED LOCATIONS AND YEARLY MARKETS VOLUMES OF THE WHOLESALE MARKET IN THE SEOUL METROPOLITAN AREA

Proposed market	1991		2000	
	Fruit/ Vegetables	Fishery products	Fruit/ Vegetables	Fishery products
(1000%).....			
1. Karak-dong*	1,414.0	189.0	1,414.0	189.0
2. Northern Area (Tobong-gu)	432.7	41.8	768.1	131.6
3. Southern Area (Kwangmyong City)	1,086.5	49.6	1,424.1	114.5
4. North Western Area (Unpyong-gu)	525.3	—	820.4	60.0
5. Norangjin*	—	233.0	—	233.0
6. Songnam City	171.9	23.3	249.4	37.1
7. Anyang City	102.7	12.7	143.3	19.7
Total	3,733.1	549.4	4,819.3	784.9

* The two markets have already been established.

TABLE 5 PROPOSED LOCATION AND YEARLY MARKET VOLUMES OF THE WHOLESALE MARKET IN PUSAN AND INCHEON

City	Proposed site of market	Fruit & vegetables	
		1991	2000
		(1000 $\frac{1}{2}$)	
Pusan	1. Western Area (Umkung-dong)	568.1	726.7
	2. Eastern Area (Anrak-dong)	536.6	718.6
	Total	1,104.7	1,445.3
Incheon	1. Central Southern Area (Kansuk-dong)	277.4	351.0
	2. Northern Area (Sukjon-dong)	167.4	229.1
	Total	444.8	580.1

service station, restaurants, sanitary facilities, waste disposal, power plants, water service, banks, related items store, etc. The size of every physical facilities may be technically determined for the marketing volume.

Investment requirements can be estimated by multiplying physical facilities size by unit costs of the construction which is calculated by an engineer. Contingency allowance should be added to the investment requirements.

3. Financing and Cost Recovery

In most developing countries, wholesale markets are completely financed by governments at different levels because investment for wholesale market facilities is too large for private individuals to invest, and because the agricultural wholesale markets are known as a kind of social overhead capital or social infrastructure. Central and city governments provide a sufficient part of the investment capital required to construct wholesale market facilities. Most of them are operated on a non-profit basis. The rentals and other market charges are normally sufficient to cover operating costs, debt service, and a reasonable amount of reserves. This financing method can be found in Europe, Asia and even in the United States.

As the other financing method, wholesale markets are organized as public cooperations. Public authorities such as central and city governments, farmers' cooperatives, growers' organizations and wholesalers may participate in financing the market investment. When the public authorities resources are insufficient, even if investment capital may be obtained from the loan markets, at home and abroad, with official warranty, an easier way to finance a new wholesale market may be for the public authorities to provide market site, to pave the traffic land inside it, to lease part of the market area to a growers' organization, and to arrange for wholesalers to finance the construction of their own sales premises. The form of financial contribution by wholesalers can either be by financing their own stalls in a form approved by the market authority, or by buying the

TABLE 6 PROPOSED LOCATION AND YEARLY MARKET VOLUMES OF THE WHOLESALE MARKETS IN TAEJU, TAEJON AND KWANGJU

City	Proposed Area	1991			2000			Remarks
		Fruits/ Vegetables	Fishery products	Fruits/ Vegetables	Fishery products	Fruits/ Vegetables	Fishery products	
Taegu	1. Northwestern (Maechon-dong)	618.8	93.3	618.8	129.2	129.2	As Planned ¹⁾	
	2. Eastern Total ²⁾	152.9 771.7	— 93.3	337.8 956.6	— 129.2	— 129.2		
1000 %							
Taejon	1. Northern(Samchon-dong)	155.0	34.9	155.0	47.8	47.8	As Planned ³⁾	
	2. Southeastern Total	83.4 238.4	— 34.9	156.8 311.8	— 47.8	— 47.8		
1000 %							
Kwangju ⁴⁾	1. Northwestern	106.1	27.7	133.7	37.1	37.1		
	2. Southeastern Total	149.5 255.6	23.5 51.2	188.4 322.1	31.5 68.8	31.5 68.8		
1000 %							

1) KAIST, *An Evaluation Study on the Establishment of Northern Market Complex of Taegu City*, April 1984.
 2) Marketing volume of fruit and vegetables is computed under the condition that shipment of the other cities will take 20% of the total transaction in wholesale markets in 1991, 15% in 2000.
 3) From the established plan by Taejon City Authority.
 4) Computed based on the ratios of incoming volume by route surveyed by KREI, 1981.

shares of the market cooperation.

In many developing countries in which the complete financing of investment capital from national resources may not be feasible, market authority or city government explores the possibility of investment cost being financed by bilateral assistance or international loan. It is the last way of financing the new wholesale market that private wholesalers are being called upon to invest completely. In any event, financing by private fund will be more costly than by government loan or banks loan at home and abroad.

4. Operation of Marketing Facilities

Well designed physical market alone is not sufficient to assure full utilization of the market. Market should also be run efficiently.

First, well organized operation and management bodies are essential to assure full utilization. The organization should be reasonable, and the staffing should be made on the basis of the limited in number and their special knowledge and technique. Where sufficient qualified local personnel is expected not to be available for operating the market, staffs can be trained and educated at home and abroad.

Second, for an efficient operation of a market, certain rules and regulations have to be enforced. The regulation might include: (1) market services, (2) market hours, (3) trading method, (4) rents and fees, (5) traffic and parking regulations, (6) lease contract, (7) loading and unloading regulations, (8) market zoning, (9) sanitation and fire prevention, (10) penalties and fine, (11) sub organization, (12) ancillary services, (13) arbitration, (14) supervision, (15) administrative and financial autonomy, (16) selection of general manager, (17) functions and services apportioned among specialized sections and departments, etc.

Third, the related marketing improvement programs may be established and implemented to utilize fully the existing and new markets. This may refer to the standardized grades and packing material, to the establishment of rural markets in producing areas, to the specialization of production, to the enforcement of legal weights and measures, and to the improvement of roads for the supply side. This also refers to the promotion of quality consciousness of retailer, and to the adjustment of pricing practices to quality standard at wholesale and retail levles. The introduction of pallets, forklifts and conveyor belts may become an improved program in high labor cost countries. A full explanation about the working of marketing system to all personnels who will use the market, or will be employed, is an essential precondition for making full use of the marketing facilities, existing and new.

Fourth, the government has to assume a key role in supporting the efficient operation of the marketing facilities. The government takes a responsibility for the construction of access roads, railroad connections,

water, sewage, electric power, telephone and telegram connections.

Finally, it is essential for success of the new market facilities to obtain traders' support and understanding of the new market functions. Wholesalers faced with creation of new facilities are likely to be suspicious or even hostile. An appropriate public relations campaign about functions improved, lower operation costs, reduced loss, improved opportunities to increase their turnover, lower rents and fees, the follow-up training measures, etc is required to convince prospective market users of the benefit deriving from new facilities and to obtain traders' support.

V. Conclusion and Recommendation

In improving physical facilities for marketing, such as storage, rural markets, wholesale markets and rural processing plants, priority should be given to the utilization of existing facilities. For investing in new facilities, decisions have to be taken on the basis of economic feasibility studies based on realistic assumptions.

In improving or investing in marketing facilities, efforts should be made to encourage participation of private and cooperative sector in the planning stage and in financing the investment. Such management will help ensure economic feasibility and efficient operation of such facilities.

In improving operation of marketing facilities, improvement of management is equally important as the improvement of physical facilities. Therefore, any marketing facility improvement programme should include a comprehensive programme to improve operational and management efficiency of the marketing facilities.

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