

DEVELOPMENT OF WHOLESALE MARKET : PLANNING VS IMPLEMENTATION A CASE OF TAEGU NORTHERN FRUIT AND VEGETABLE WHOLESALE MARKET*

LEE CHONG-YEONG**

I. Introduction

As urban population grows, efficient marketing system to supply agricultural produce, especially fruits and vegetables, is becoming increasingly important in Asian cities. But the improvement of the tradition-bound old wholesale markets which are usually located in narrow and congested areas in urban centers is difficult and requires careful planning and implementation.

The purpose of this paper is to examine a case of Taegu Wholesale Market to discuss how to plan for the improvement and how to implement the planned improvement programme. An important lesson to learn from this case study is that the improvement of agricultural wholesale market does not mean a mere modernization of the physical facilities. Much more difficult part is the improvement of the prevailing trading practices. For a success of a programme to improve urban wholesale market system, participation of the business communities, from the inception of the programme, and their voluntary cooperating is essential.

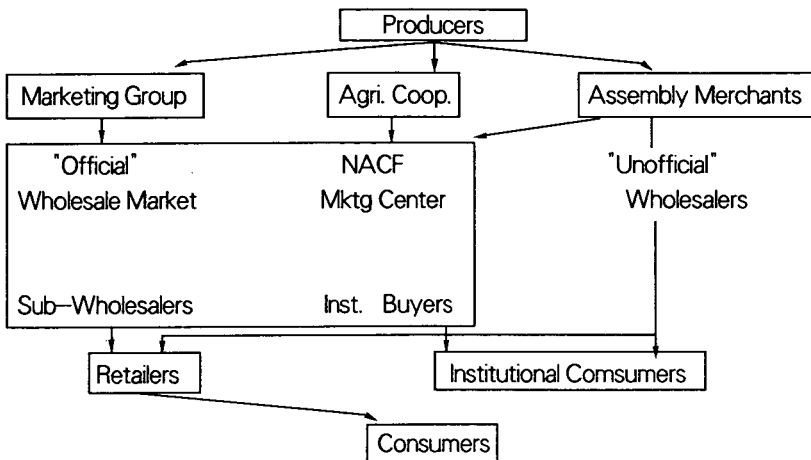
II. Fruit and Vegetable Marketing in Taegu

Taegu, with its 2 million population, of which about a half

* Views expressed in this study are those of the author's, and the institutions related or concerned with the problems discussed in this paper have not been requested to clear the statements or the views expressed by the author.

** Professor, Kyungpook National University, Taegu, Korea.

FIGURE 1 Fruits and Vegetable Marketing Channels in Taegu Ares



reside in the metropolitan area, is the third largest city in South Korea. To supply fruits and vegetables for the Taegu population, which consumes about 300kg per person per year, and to distribute to other towns, about 810,000 tons of fruits and vegetables (130,000 tons of fruits and 680,000 tons of vegetables) are brought into Taegu wholesale market areas annually. About 43% of it enters the city through Paldal Bridge in the north-west, 35% of it through Kyungsan Highway in the east and 13% from the west.

There were three groups of wholesale institutions in Taegu as shown in Table 1. The "official" market operated by the Jungang Fruit and Vegetable Wholesale Company sold about 25,000 tons in 1986. There were four wholesale centers under National Agricultural Cooperatives Federation, which sold about 125,000 tons in 1986. The third group was unofficial wholesalers, called commission agents, who were clustered in three places in the city, and sold about 658,000 tons. The former two official wholesale markets shared about 18% of the total sales of 808,000 tons in 1986.

Out of the total quantity sold through the three wholesaling institutions in Taegu, about 378,000 tons (47%) was

TABLE 1 Fruit and Vegetable Wholesaling Institutions in Taegu

Groups	Markets	'000 Tons sold in 1986			Jobbers or Agents	
		Fruit	Veget	Total	No.	Ave. Tons
Official	Jungang	6(4)	19(3)	25(3)	20	1,250
NACF	Main	11	11		17	
	Central	7	10		17	
	Taepyongno	22	8		18	
	Horti. Coop	6	50		14	
	Total	46(35)	79(12)	125(15)	56	2,200
Commis- sion	Chilsung	74	92		119	
	Wondae	7	131		57	
Agents	Paldal	—	354		56	
	Total	81(61)	577(85)	658(82)	236	2,800
Grand Total		133(100)	675(100)	808(100)	312	2,600

Note : The figures in parenthesis show percentages.

TABLE 2 Fruit and Vegetable Wholesale Markets Facilities for Taegu City

(Space, m²)

Year	Population	Existing or Required Space		
		Throughput(m.t.)	Site	Building
1986	2.1 mil.	808,000	13,871*	11,817*
1986	(Legal Requirement for 1 million people)		16,500	6,600
1991	2.4	905,000	38,860	
2001	3.0	995,000	44,300	

* Official markets only.

consumed in Taegu area and 430,000 tons (53%) was re-shipped to other cities.

It was estimated that Taegu had population of 2.1 million in 1986 and each person consumed 280kg of fruits and vegetables. By the year 2001, the population was expected to grow to 3.0 million and per capita consumption would increase to 327kg, and nearly 1 million tons of fruits and vegetables would be traded through wholesale markets (Table 2). But the existing facilities of the two official wholesale markets (Jungang and NACF) were far short of meeting such requirements.

Therefore, there was an urgent need for the increase and improvement of agricultural wholesale market facilities.

III. Planning for a New Wholesale Market

1. The First Study

In 1980, the Central Government (Economic Planning Board and Ministry of Commerce and Industry) formulated National Marketing Improvement Plan, and decided to establish "Distribution Center" in major cities, to cater the need for physical handling and distribution requirements of not only agricultural produce but also industrial products.

In accordance with the overall plan, the Ministry of Agriculture and Fisheries formulated National Agricultural Wholesale Market Development Plan in 1983, and selected Maechun-Dong, north-western suburb, for a new wholesale market site for Taegu city. The Korea Advanced Institute of Science and Technology(KAIST), a government "think-tank," was entrusted to conduct a detailed study. The KAIST study was carried out from October 1983 to April 1984. The KAIST plan included not only agricultural wholesale market but also distribution facilities for industrial produces, making it a "Distribution Center," as conceived by the Economic Planning Board.

The required fund (35,700 million won or U.S.\$ 45 million) was to be financed by the Central Government (15%), Taegu

TABLE 3 Northern Taegu Distribution Center (KAIST Plan 1984)

Facilities	Site(m ²)	Bldg(m ²)	Million Won
Fruits & Veg. Market	60,000	37,000	10,500
Fish Market	28,000	17,000	4,800
Grain Market	6,200	4,200	1,600
Industrial Products Market	5,700	5,400	1,300
Truck Terminal	72,000	27,000	6,300
Infra-Structure (Road, etc.)	36,000	5,300	11,300
Total	207,000	95,000	35,700

City (15%), private investment (46%) and loan (24%) (Table 3).

The plan, including the basic lay-out plan of the "Distribution Center" was in principle approved by the Ministry of Agriculture and Fisheries and Economic Planning Board in December 1984. Based on the basic lay-out plan, detailed design was made and construction of the fruit and vegetable market (Building A) started in the same year, with Taegu City's financial contribution. Private contribution was not available (for the KAIST layout plan, see Appendices).

While the construction was in progress, the City Government encountered several problems. It seemed that the facilities included in the plan were beyond the capacity of the site. It seemed that the lay-out plan would hinder the traffic movement in the market. The private sector was not willing to make financial contribution and the central government grant was not forthcoming as was originally envisaged. Also, the City Government itself made no firm commitment to push forward the integrated "Distribution Center" plan.

Therefore, the City Government decided not to include in the plan the six facilities which were in the original KAIST plan; i.e. grain market, related products market, industrial products market, industrial product storage, cold storage, and petrol station. Having eliminated these 6 facilities, the Northern Distribution Center would become nothing but a fruit and vegetable wholesale market.

Because of the major change in the plan, it became necessary to re-examine the entire plan itself to readjust to the new thinking. In November 1986, the City Government requested Korea Industrial Research Institute (KIRI), a private organization, 1) to re-examine the KAIST plan, 2) to design a new plan to establish a fruit and vegetable wholesale market, including operational plan of the market. KIRI was told not to change plan for the fruit and vegetable market (Building A), because construction of the building had already started.

2. Second Plan (1987)

KIRI team started working from 3 November 1986 and completed its work in May 1987. The team found 5 major

defects in the original plan, prepared by KAIST team.

First, the original plan was based on the estimated annual sale of 450,000 tons of fruits and vegetables in Taegu. The fruit and vegetable market (Building A) which was under construction was based on this estimation. However, KIRI's estimation was 810,000 tons, far more than the original estimation.

Second, the design and layout of the fruit and vegetable market (Building A) was not suitable to accomodate physical flow of 810,000 tons of produce. However, construction work of the building was already a halfway through, and therefore the building plan could not be changed. The only alternative was to make the best possible adjustment of the plan, without changing the construction plan of Building A, which is the main building.

Third, the function of the Truck Terminal was not clear. The plan for the truck terminal remained idle, even after its administration building was completed in 1984. Operation of the truck terminal would affect the agricultural wholesale market, as it shared the same entrance road.

Fourth, the trading practices and the requirements of the commission agents in the "unofficial wholese market" were not fully understood. The merchants were not motivated to move to the new market. They believed that unless all the traders move to the new market, those who remain in the existing markets in town would benefit until the new market establishes its dominant position as the central wholesale market. Furthermore, trading by auction will be requirde by law in the new market, but the commission agents were not used to the practice of auctioning. The commission agents shared more than 80% of the total sales of fruits and vegetables in Taegu, and therefore their voluntary participation to the new market was essential.

Fifth, it seemed the City Government itself was not fully committed to push forward the project. There was indications that the City Government would not actively push forward the project beyond the Building A, because of difficulty of obtaining necessary fund and because of the risks involved in the project. However, the Building A alone was not sufficient to cater the needs for fruit and vegetable trading, and it must be

TABLE 4 Estimated Sales of Wholesale Market ('000 tons)

Year	Population('000)	Vegetable	Fruit	Fish	Meat
1988	2,270	648	249	82	24
1991	2,457	658	280	96	31
1996	2,766	650	312	122	45
2001	3,042	642	342	146	61

supplemented by several other facilities to become an agricultural wholesale market complex.

Salient Features of the Second Plan

Taking the above problems into consideration, KIRI Team prepared the second plan, and submitted it to Taegu City Government in May 1987. To solicit views and comments on the report, the City Government sponsored a meeting to discuss the report and invited representatives of chamber of commerce, official wholesale market, agricultural cooperatives, fruit and vegetable commission agents in unofficial wholesale markets and university professors to the meeting. Some of the salient features of the KIRI plan were as follows;

Demand Estimate

KIRI estimated that by the year 2000, 642,000 tons of vegetables, 342,000 tons of fruits, 146,000 tons of fish and 61,000 tons of meat would be traded through wholesale market (Table 4).

To accommodate the wholesale need, KIRI estimated that about 70,000m² of building floor space would be required, and there should be two wholesale markets; one in the north and one in the east (Table 5).

Basic Layout Plan

For the northern market, KIRI suggested it should be an integrated agricultural wholesale market which includes facilities for two fruit and vegetable wholesale markets (A and B), fish wholesale market, meat wholesale market and supporting service facilities. The required space for the northern market was as shown in Table 6.

TABLE 5 Taegu Wholesaling Facilities Required Building Space in Year 2000 (m²)

Category	Northern Market		Eastern Market	
	'000 m.t.	m ²	'000 m.t.	m ²
Fruit & Veg.	591	26,500	394	18,100
Fish	59	5,000	88	7,500
Meat	37	1,000	24	1,000
Other Facilities	—	7,000	—	5,200
Total	687	39,900	502	31,800

TABLE 6 Required Floor Space of the Northern Market (m²)

Facilities	Floor Space
Fruit & Veg. Market (A)	16,500
Fruit & Veg. Market (B)	10,000
Fish Market	5,000
Meat & related products	5,800
Service Building	1,500
Water Supply	500
Guard House	200
Power Transmission	300
Petrol Station	300
Total	39,900
Truck Sale Area	4,400
Parking Area	29,600
Total Market Area	73,900

The building layout plan is as shown in Appendices. To facilitate the traffic flow to the market, there should be a underpass crossing from the main road, and the bridge on the entrance to the market should be 6-lane wide.

However, the City Government was inclined to use only the fruit and vegetable market (Building A) and some service facilities, without including building B and facilities for fish market and meat market. KIRI pointed out that it would encounter several problems, such as; 1) Building A alone would not be sufficient to make the northern market a real wholesale center of Taegu, 2) there would be shortage of required facilities, 3) shortage of parking area, 4) insufficient capacity to

handle future requirement of physical flow, and 5) the city plan was not in line with the wishes of the traders who were supposed to move into the market. KIRI suggested that at least enough area of land should be reserved for future expansion.

Supervision and Management

Taegu City would establish a separate office, called "Taegu Northern Wholesale Market Administration Office" to supervise the market activities and to maintain the physical facilities. Eighteen full-time staff members would be required.

Wholesale Companies

By law, there should be licenced wholesale company (or companies) in a wholesal market. The function is to assemble fruits and vegetables and ofer them for sale by auction. KIRI suggested that there should be two wholesale companies in the market. The Jungang Fruit and Vegetable Wholesale Company, the existing official market operator, should be the one. The National Agricultural Cooperative Federation, which had four wholesaling centers in Taegu should be accommodated into the fruit and vegetable market (Building B) when it is completed. The private commission agents (numbering about 150) in the three unofficial market areas should establish a legal wholesale company and enter the new market. The wholesale companies should be allowed to collect 7% fees for their service (see Table 8).

Sub-Wholesalers

By Law, open auction should be the method of sales and only the registered sub-wholesalers are allowed to bid in the auctioning. KIRI suggested that in addition to the existing sub-wholesalers of Jungang Fruit and Vegetable Wholesale Company, all the commission agents operating in the "unofficial markets" should be allowed to become sub-wholesalers. As far as possible, one store should be assigned to each sub-wholesaler. There would be 104 sub-wholesaler's stores available in the new market. The sub-wholesalers would be allowed to collect 4% commission (see Table 8).

TABLE 7 Estimated Income Statement of a Wholesale Company
(Jan. 1 ~ Dec. 31, 1988, million won, sales commission 7%)

Expenditure		Income	
Items	Amount	Items	Amount
Salary	260	Commision	2,121
Market fee	151		
Maintenance	73		
Other Expences	69		
Entertainment	64		
Tax	151		
Marketing Subsidy	303		
sub-wholesaler	303		
subsidy	25		
Misc.	721		
Profit			
Total	2,121	Total	2,121

TABLE 8 Estimated Income Statement of a sub-wholesaler
(Jan. 1 — Dec. 31, 1988, '000 won, sub-wholesaler's fee 4%)

Expenditure		Income	
Items	Amount	Items	Amount
Salary	7,704	Sub-wholesaler's fee	23,306
Maintenance	417		
Other expenditure	691		
Entertainment	699		
Reserve	171		
Profit	13,624		
Total	23,306	Total	23,306

Training

KIRI suggested that a 2~3 day special training sessions would be useful for all those concerned, a few weeks before the opening day. The training should cover laws and regulations cncerning wholesale market operation, auctioning system, marketing information system business ethics, etc. Then there should be occasional training for auctioners, sub-wholesalers

TABLE 9 Estimated Profit of the Market Management Office
(million won. won 760 = U.S.\$ 1, market fee 0.5%)

	Run as Integrated Market			Run with Bldg A only		
	Revenue	Cost	Profit	Revenue	Cost	Profit
1988	871	1,150	-279	304	459	-156
1989	1,013	1,185	-171	366	472	-106
1990	1,176	1,220	- 44	426	488	- 62
1991	1,314	1,259	55	489	504	- 15
1996	1,743	1,497	264	564	602	- 37
2001	2,294	1,760	534	650	728	- 78

and other traders in the market. The commission agents in the unofficial markets were not familiar with auction sales method.

Economic Feasibility

KIRI prepared estimated profit/losses statements of the three institutions which would be involved in the management and operation of the new wholesale market. For detail comparison of the KAIST study and KIRI, see the Appendices.

IV. Decision of the City Government

Based on the KIRI's report, and considering financial resources and other factors, the Taegu city government made decision different from the KIRI's recommendation on some major points.

First, the city government decided to go ahead with the construction of the fruit and vegetable market (Building A) building and office space first, and start operating the market. The bridge leading to the market would be widened as suggested, but the underpass crossing from the main road could not be built immediately.

Second, KIRI suggested there should be two wholesale companies in building A. One should be Jungang Fruit and Vegetable Wholesale Co. which was an official wholesale market operator. The other company was that of the commission agents in "unofficial wholesale market." About 100

fruit and vegetable commission agents contributed funds to establish "Yeungnam Co.," a legal person, and became its shareholders. In addition to the two companies, the City Government requested National Agricultural Cooperative Federation (NACF) to join the new wholesale market as one of the wholesale companies. Therefore, there would be three wholesale companies. NACF Taegu Office had four wholesale centers in the city under its management. NACF agreed that its Taepyongno Branch would move into the new market.

Third, since the project was behind the schedule, the city government wanted to open the market as soon as possible, even though construction of all the facilities had not been completed. It was scheduled that the market operation would start in mid April. But election of the national congressmen was scheduled in the last week of April. Anticipating the need for administrative force to "persuade" merchants to move into the new market which may affect the election, the city government decided to postpone the opening date to 10 June.

Fourth, the City Government started to accept applications of sub-wholesalers, the key actors in the market, whose function would be to participate in bidding in the auction sales. All the sub-wholesalers must belong to one of the three wholesale companies which would operate in the market. There was no problems with the sub-wholesalers of the Jungang Fruit and Vegetable Wholesale Co. However, the sub-wholesalers of the newly formed Yeungnam Co. were also shareholders of the company. By law, shareholder of wholesale company was not allowed to be the company's sub-wholesaler concurrently. Therefore, the sub-wholesalers of the Yeungnam Company had to withdraw their names from the shareholder's list and replaced with names of their family members or relatives.

More problems came from the sub-wholesalers of NACF's Taepyongno Branch which had to close its market and move into the new market. The NACF Taepyongno Branch sub-wholesalers refused to move to the new market, unless all the four NACF markets also move in. They feared that they would lose business by moving into the new market which was "inconveniently located." They even staged a sit-down strike in

the NACF Office.

Fifth, the floor space of the market yard was to be divided equally among the three wholesale companies. However, the Yeungnam Co. demanded that they should be given larger share of the floor space. Yeungnam Co. shared about 70% of the number of the registered sub-wholesalers and volume of trading. They also requested that the mandatory sales by auction should be exempted for trading of vegetables, because of the difficulty of standardization. They handle more than 85% of vegetable sales in Taegu area, and they are not used to the sale by auction.

Sixth, in preparation for the scheduled opening date of 10 June, the City Government, with support from Agricultural Marketing Corporation, held two-day (afternoons only) training session (19–20 May), as was suggested in KIRI's report. About 120 people, mostly the newly-registered sub-wholesalers of Yeungnam Co. participated the training session. The sub-wholesalers of Jungang Fruit and Vegetable Wholesale Co. did not participate, because they were involved in sales of imported bananas which had just arrived on that day. The sub-wholesalers of NACF Taepyongno Branch did not participate because they still refused to move into the new market.

Seventh, because of the strike by the sub-wholesalers of NACF Taepyongno Branch, an emergency meeting of representatives of the three wholesale companies was arranged by the City Government on 18 May, one day before the training started. The representatives demanded that the opening date of the new market should be postponed. They pointed out that only Building A and an office were ready but other service facilities were not ready yet. The bridge expansion work was yet to be carried out. Furthermore, it was not yet decided when to start construction of the underpass crossing to enter the market from the main road. The City Government agreed that the opening date would be postponed to September.

V. Implementation

The market was opened on 7 October 1988. In addition to the

management staffs of the wholesale companies and their sub-wholesalers, Taegu city government officials, guests from National Wholesale Market Federation and academicians took part in the opening ceremony.

Considering the KIRI report and other factors, several changes were made which were different from the KIRI's suggestion.

1. Market Administration

Taegu Northern Agricultural Wholesale Market Administration Office was established under direct administrative control of Taegu City Government. The Office employed 13 staff members and 5 guards. The function of the Market Administration Office was to supervise the trading at the market, supervision of wholesale companies and their sub-wholesalers, maintenance of the facilities and collection of statistics. This was in accordance with the KIRI report.

2. Market Building

There were changes in the use of the market yard (See the Appendices).

First, the KIRI's plan included 104 sub-wholesaler's store-cum-office inside the fruit and vegetable market building A, right next to the auction yard inside the building. However the vegetable sub-wholesalers complained that the allocated store space was too narrow for trading bulky and unstandardized vegetables, and therefore they preferred trading outside of the main market building. In consultation with them, the space originally allocated for "truck sales" was allocated to vegetable sub-wholesalers, and the market authority built temporary buildings for them.

Furthermore, 64 temporary stores were built (100m² each) around the main market building (Building A) at the expense of the sub-wholesalers of Yeungnam Company who use the facility.

A temporary Dried Marine Products Wholesale Market building was built to accomodate the immediate need for trading of dried sea weeds, dried fish, dried shells and other dried marine products.

Also a temporary Related Products Retail Market building was built for the benefit of retailer-customers who need to buy spices, and other food items which are needed to make "kimchi" (Korean pickled vegetable) or to cook vegetables at home.

3. Entrance Road

The bridge on the entrance was expanded into 4-lane bridge. Undercross from the main road leading to the market was planned to be built in 1990.

4. Wholesale Companies and Sub-Wholesalers

The wholesale companies and their sub-wholesalers who moved into the new market were as follows;

Jungang Co.	65	Sub-Wholesalers
NACF	32	"
Yeungnam Co.	100	"
Taegu Dried Marine Products Co.	54	"

Because the merchants of the Taegu Taepyongno Branch of NACF refused to move into the new market, NACF newly recruited its sub-wholesalers.

5. Trading Method

Auction method was used for most of the fruits (97%). But for vegetables, about 90% was sold through direct negotiations.

6. Use of the Former Market Sites

The former wholesale market sites were turned into retail markets. However, still some commission agents or sub-wholesalers remained in the former market sites of Taegu Co., NACF and Yungnam Co., and were engaged in business.

7. Performance

The result of the performance of the new market in the first two years of operation was as shown Table 10. The monthly sales in quantity are shown in Appendix.

TABLE 10 Sales Performance of Taegu Northern Fruit and Vegetable Wholesale Market (tons)

	Jungang	Yeungnam	NACF	Dried Marine	Total
1989					
Fruit	13,097	1,823	9,653	—	24,573
Vegetable	1,040	44,875	3,690	—	49,605
dried Marine Products	—	—	—	983	983
Total	14,137	46,698	3,343	983	75,161
1990					
Fruit	23,522	2,196	11,247	—	36,965
Vegetable	1,749	67,242	1,713	—	70,704
Dried Marine Products	—	—	—	699	699
Total	25,271	69,438	12,960	699	108,368

8. The Second Phase

Although the annual sales (108,368 tons) were still below the KIRI's estimation (543,000 tons), the City Government was involved in planning for the second phase of the project. The second phase includes 1) fruit and vegetable building B (10,000 m²) to be assigned to NACF, 2) fish market (5,000m²) and 3) expansion of the related product market (5,700 m²).

Regarding the financing, the City Government was considering the wholesale companies and their sub-wholesalers to pay for the investment. In return, the wholesale companies can operate the market for 20 years without rent, but after 20 years, the market buildings will become city government's property. However, no official decision was made as of the end of March 1991.

V. Lessons

By studying the case of the Taegu Northern Wholesale Market Project, we can learn several lessons from it.

First, an ambitious large scale project, which was decided without taking into consideration specific local conditions, will not succeed. The original idea of "Distribution Center" could not be implemented because of the site, fund, and most importantly the lack of understanding of the concept the need for it.

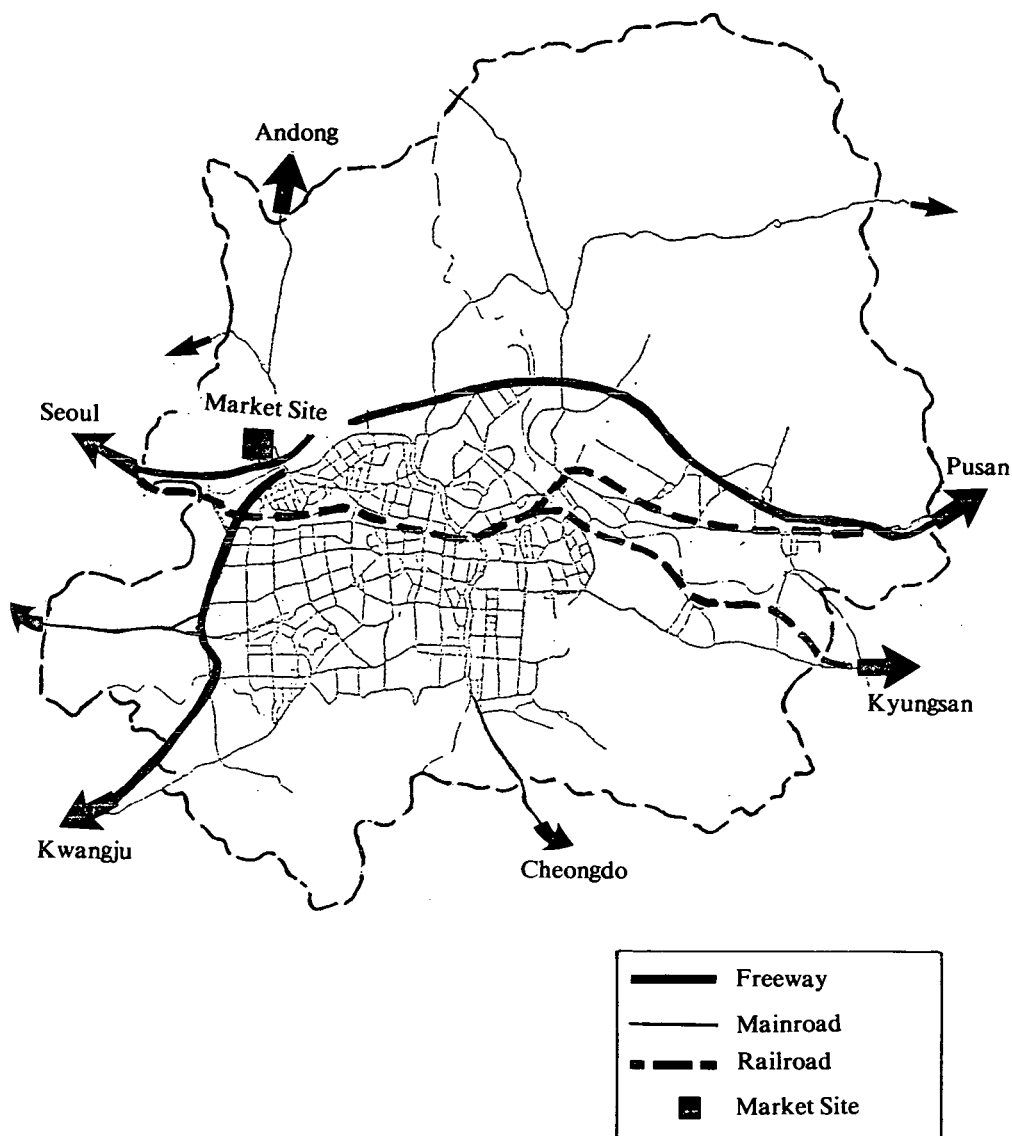
Second, the project should have at least the minimum level of economy of scale. KIRI's report suggested that it should be an integrated agricultural wholesale market, including fish and meat. At the meeting held in the City Government in May 1987 to hear KIRI's report, the representatives of the local business community strongly requested that not only all the fruit and vegetable markets but also fish and meat markets in the city should be relocated to the new market to create initial impact of the market. A partial relocation of fruit and vegetable market alone would not create sufficient impact to provide momentum for the new market. In that case, those who remain in the town will benefit, and those who cooperated with government suggestion will be losers.

Third, from the beginning of the planning stage, participation of the local business community and their commitment based on the economic and rational need are essential. As a proof of their participation and support to the project, they should share the cost of the project. If the plan is not attractive enough for the local business community, then the plan should be revised to meet their needs.

Fourth, detail analysis of local trading practices must be made, and the building layout should be planned based on the acceptable local trading practices. The sub-wholesalers store-cum-office which was planned inside the main building, modeled after Japanese wholesale market, was not favored by the local vegetable sub-wholesalers most of whom were commission agents in the former "unofficial" wholesale market. However they share the major portion of fruit trading. Therefore, all the sub-wholesalers' stores inside the main market building were demolished and were relocated to outside of the building. Also "the truck sales area" originally intended for sales of vegetables on truck without unloading, was not accepted by the merchants, and therefore the space was reallocated for vegetable sub-wholesalers.

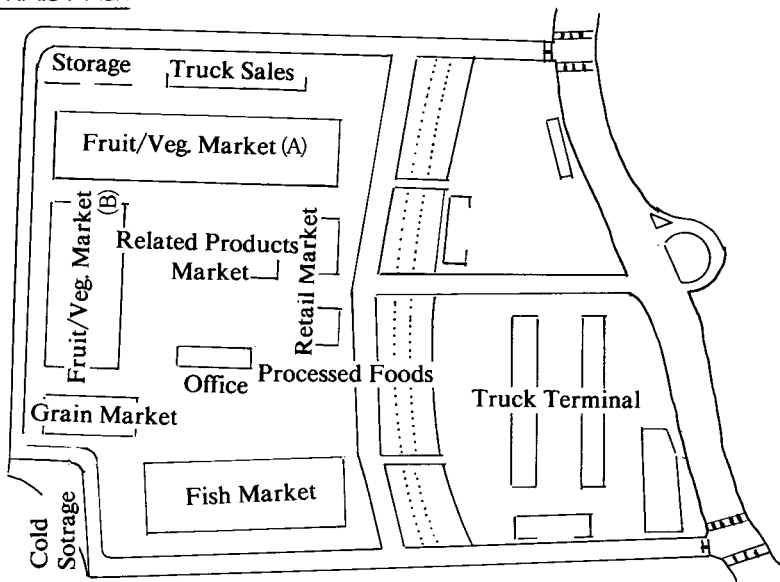
APPENDIX 1

Map of Taegu City

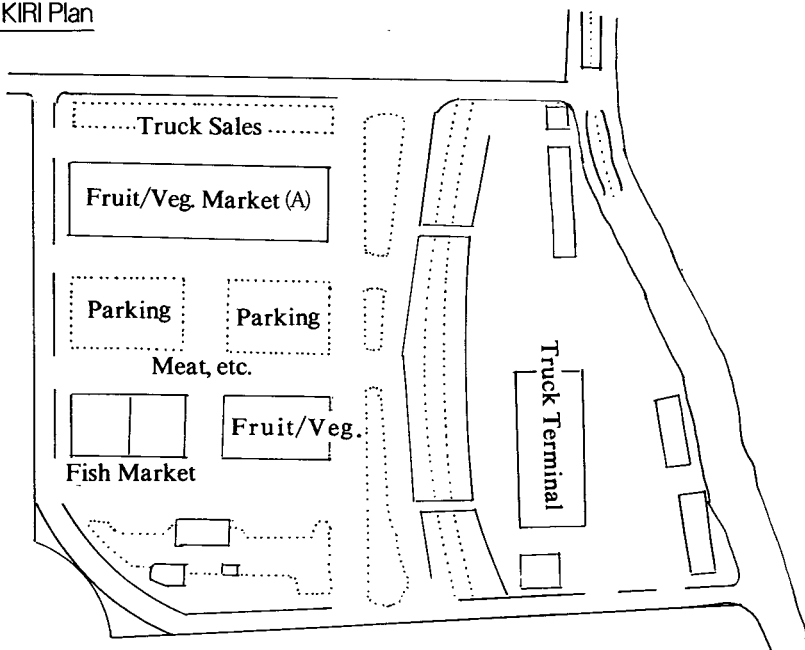


APPENDIX 2 Comparison of Market Layout Plans

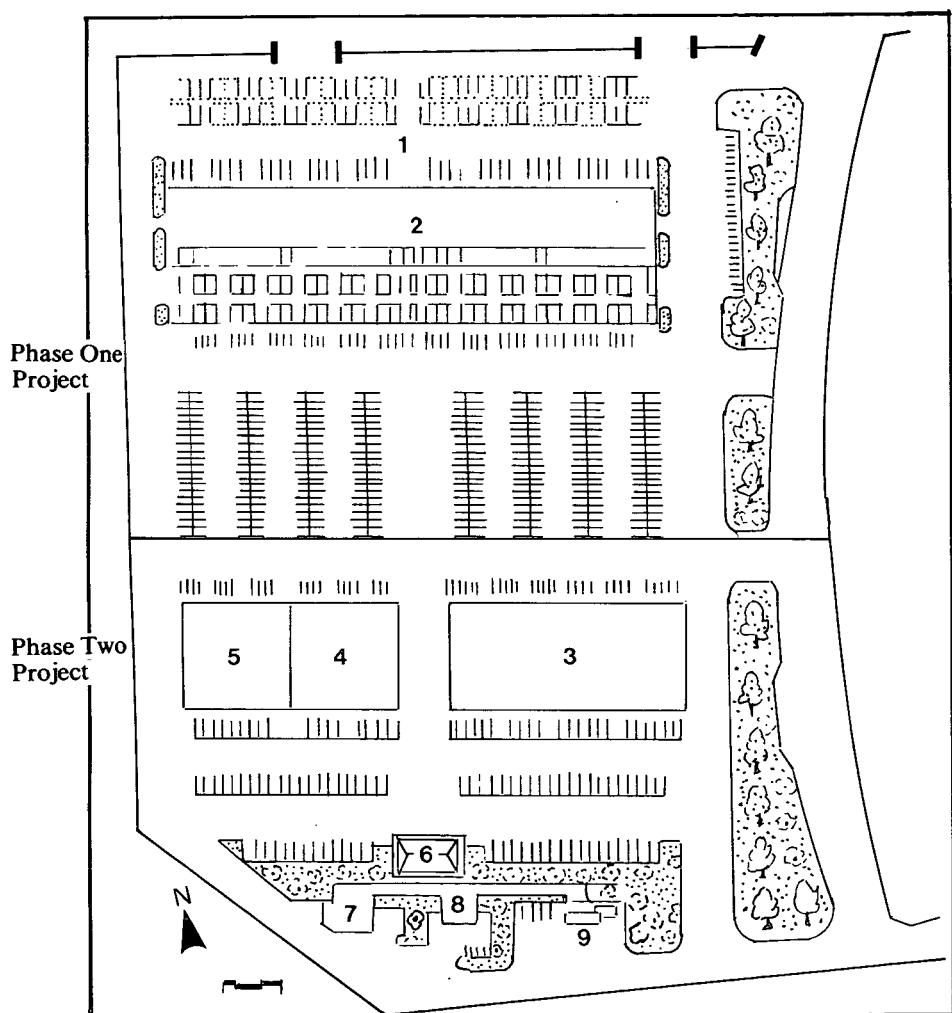
1. KAIST Plan



2. KIRI Plan

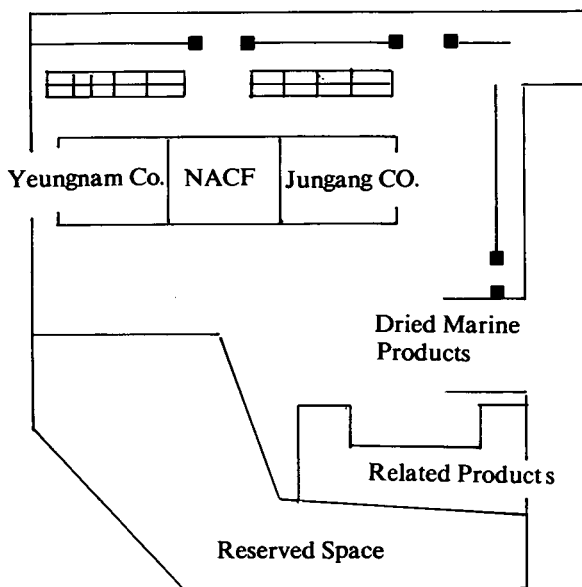


3. KIRI Plan (Detail)

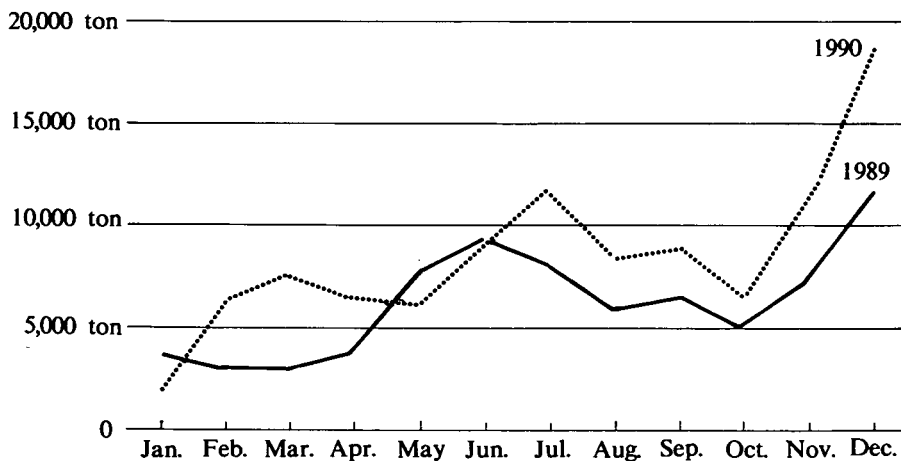


- | | |
|------------------------|------------------------|
| 1. Truck Sales Area | 2. Fruit/Veg. Market A |
| 3. Fruit/Veg. Market B | 4. Related Products |
| 5. Fish Market | 6. Service Building |
| 7. Water Supply | 8. Power Station |
| 9. Petrol Station | |

4. Implemented Plan



APPENDIX 3 Taegu Northern Fruit and Vegetable Wholesale Market: Monthly Sales of Fruits and Vegetables



APPENDIX 4 Comparison of KAIST Study vs KIRI Study

<u>Items</u>	<u>KASIT Plan</u>	<u>KIRI Plan</u>
1. Study Period	10/10/83 — 06/04/84	13/11/86 — 30/05/87
2. Consumption Estimate	No estimation for whole Taegu City	808,000 tons (merchant survey)
3. Estimation of Sales in the New Market	1,768 ton/day Fruit 924 ton Veg. 844 ton (Fish 400 ton) or 618,000 ton/year Fruit 323,400 ton Veg. 295,000 ton (Fish 140,000 ton)	1,552 ton/day Fruit 434 ton Veg. 1,117 ton (Fish 108 ton) 543,100 ton/year Fruit 152,000 ton Veg. 391,000 ton (Fish 38,000 ton)
4. Market Bldg.	F. & V. 37,000 m ² Fish 18,000 m ²	F. & V. 26,700 m ² Fish 5,000 m ²
5. Market Site	82,000 m ² (F. & V. only)	74,000 m ²
6. Outflow	30% (guess)	Fruit 35% Veg. 57%
7. Economic Feasibility	No study	Simple calculation
8. Researchers	Transport economists	Agricultural economists