

# Bus and Subway Integration in Seoul: A Case of Doing Nothing

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Public transportation provided by small private operators has attracted much attention, particularly in the developing world. In general, private services have been found to be both effective and profitable in contrast to those provided by large public systems. In many countries, public and private transportation services run side by side, which makes planning complex. An example from Seoul, South Korea, is discussed that features an exclusively private bus system and a publicly operated subway network. The two systems display quite different characteristics: the bus services were established long ago and are run by 90 predominantly small operators who are financially independent. Most of the subway is new, capital-intensive, and operated by a large public corporation that is heavily subsidized. Because the subway network was greatly expanded in 1985, the government planned to integrate the two disparate systems. The task proved so complex, however, that the government chose to do nothing. The obstacles to the integration plan are examined, and the bus companies' spontaneous adjustment to the subway expansion is reviewed. The discussion reveals how a viable strategy for planned change can be designed.

Public transportation provided by small private operators has been the subject of much attention, particularly in the developing world. In general, their services have been found to be both effective and profitable in contrast to those provided by large public systems (1). In many countries, public and private transportation services operate alongside each other, creating a complex planning environment. The following example from Seoul, South Korea, features an exclusively private bus system and a publicly operated subway network. The two systems display quite different characteristics: the bus services are long since established and are run by 90 operators, most of them small and financially independent; most of the subway is new, capital-intensive and operated by a large public corporation that is heavily subsidized. As the subway network was greatly expanded in 1985, the Government planned to integrate the two disparate systems. The task proved so complex, however, that the authorities chose to do nothing. This article describes the obstacles to the integration plan in detail, and examines the manner in which the bus companies have responded to the subway expansion. The objective of this paper is to contribute to a discussion dealing with the design of a workable strategy for planned change.

## ORIGINAL PLAN FOR CHANGE—ITS RISE AND FALL

Seoul grew rapidly in the 1960s and 1970s. The population, which quadrupled in 13 years, now approaches 10 million. This spectacular development exerted strong pressure on the public transport system which provides 75 percent of all daily trips (2). Ninety private firms operate the city's bus service system, whose 363 routes and approximately 8,300 vehicles make it among the most extensive in the world (3). Heavy demand has resulted in historically profitable operations, with only a few rural routes receiving government subsidy. Compared to the growth of the system as a whole, the bus companies have remained small. Half of the 90 firms run three or fewer routes: 82 percent run five or fewer routes (Table 1). The average fleet size comprises fewer than 100 vehicles.

The government began subway construction in the 1970s to accommodate the fast-growing demand for transport. Late in 1985, the network was almost doubled, from 62 km to a total of 116.5 km. The costly subway system, which boasted an automated fare system, air conditioning, and artistically decorated stations, forced the issue of bus/subway integration.

The need for integration had been raised by several studies on Seoul's public transport system in anticipation of the subway expansion (4). Integration was not solely a matter of netting maximum returns on the subway investment by establishing proper feeder services and reducing competition from bus trunk lines, but was also meant to deal with certain inefficiencies of the bus system that had developed over time. Although the bus services indeed possess such strengths as financial self-sufficiency, availability, and affordability, there are also severe shortcomings—for example, extensive route duplication. It is estimated that more than two-thirds of routes overlap, which results in rider confusion and bus congestion in busy corridors. Another problem is long, circuitous routes (2).

Many transport professionals felt that the subway expansion in 1985 presented an opportunity to reexamine the entire bus network, as most bus companies would experience ridership cuts. It was estimated that 82 percent of the operators would feel the impact of ridership switching to the subway, although most companies would lose fewer than 20 percent of their riders (Table 2). The government ordered a special study with a mandate to propose detailed route revisions, as well as to make recommendations on such related issues as an integrated fare system and consolidating bus industry structure (2).

However, as new subway lines opened, only small changes occurred in the bus system. Adequate feeder services had not been created, trunk routes competing with the subway were left intact, and the problems of network inefficiency were left unsolved. The government had chosen to do nothing.

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TABLE 1 NUMBER OF ROUTES BY NUMBER OF COMPANIES, 1986 (3, pp. 119-125, 140-143)

No. of Routes	No. of Companies	% of Total	Cum.
1	6	7%	7%
2	11	12%	19%
3	25	28%	47%
4	17	19%	66%
5	14	16%	82%
6	7	8%	90%
7	3	3%	93%
8	4	4%	97%
9	3	3%	100%

Total number of routes: 363

Total number of companies: 90

Mean: 4.0 routes per company

Note: Includes routes provided by city bus (regular service) and seatbus. Seatbus offers premium service - a guaranteed seat - at a higher fare. The number of seatbus routes was 82.

It should be noted that the government in Korea is well-known for its forceful and successful interventions to promote economic growth (5). The construction of Seoul's subway system is an example of the city government's leadership. Why, then, did it desert the seemingly appealing plan to integrate the bus and subway systems?

## FACTORS IMPEDING PLANNED CHANGE

### Financial Impact on Bus Companies

Possibly the most important factor in the failure to implement the integration plan was that the government had no way of

knowing exactly how it would affect bus companies. While the firms report ridership monthly and prepare annual accounts, the database is very unreliable. There are strong prejudices owing to taxes as well as other reasons (6).

In 1984, more than a third of the firms reported losses (Figure 1) (2, pp. 228-233). The operators claim that their business is declining because of competitive pressures. Car ownership, for example, has grown by 21 percent per year owing to rising incomes (2). Similarly, demand for taxi and specialized minibus service is up. Table 3 shows a modal split in 1985 before the subway expansion; since then the share of the bus mode has decreased by 5 to 10 percent.

At the same time as the buses' overwhelming dominance in the market is declining, operating costs have escalated and

TABLE 2 PROJECTED CHANGE IN RIDERSHIP FOLLOWING SUBWAY EXPANSION BY NUMBER OF BUS COMPANIES, 1985 (2, pp. 150-164)

Ridership Decrease (%)						
	40%<	30-40%	20-30%	10-20%	<10%	Total
No. of Companies	5 <sup>a</sup>	4	8	22	35	74
% of Total	6%	4%	9%	24%	39%	82% <sup>b</sup>
Ridership Increase (%)						
	<10%	10-20%	20-30%	30-40%	40%<	Total
No. of Companies	12	1	1	0	2 <sup>a</sup>	16
% of Total	13%	1%	1%	0	2%	17% <sup>b</sup>

a/ some extreme values are caused by relatively large changes to low-volume routes.

b/ these numbers do not add to 100% due to rounding off.

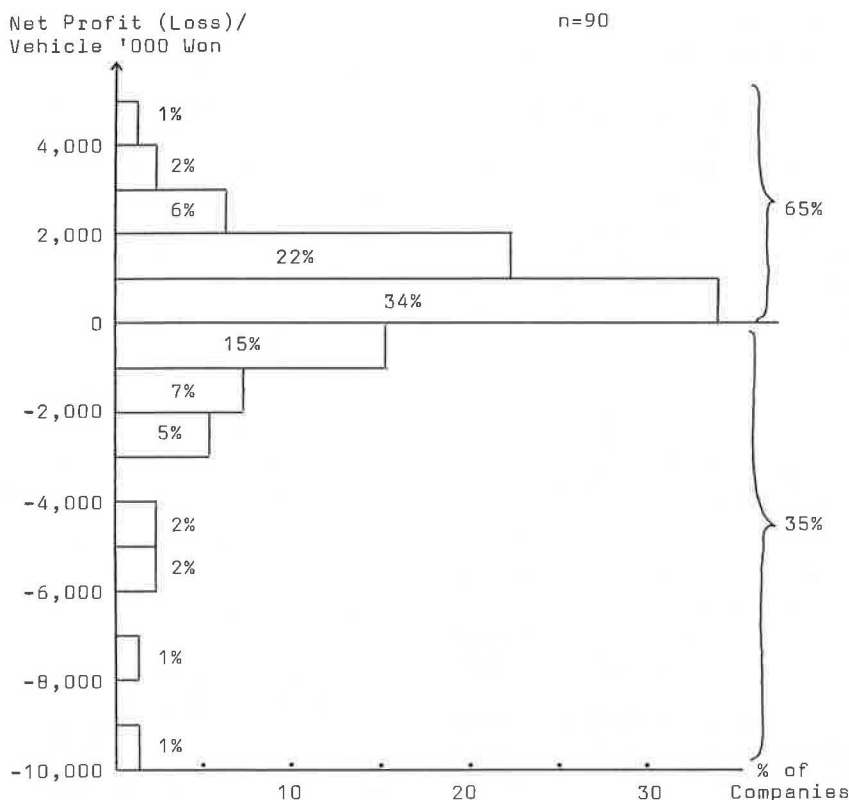


FIGURE 1 Net profit/vehicle by percentage of bus companies, 1984 (2).

regulated fares been kept low. The regular fare of 120 Won (about 15 cents) has remained unchanged since 1984. As the same rate applies to all urban systems across the country, operators in Seoul, where the cost of living is higher, feel particularly squeezed. The city's bus business is certainly not as profitable as formerly. However, according to the Director General of the Transportation Bureau, Seoul's bus regulating organization:

It's hard to know if the bus companies really are losing money. There are example of money being pocketed or siphoned off. Some owners even lend money to their ailing company at a handsome interest rate. Nobody knows how vulnerable the bus companies are to change. That's the big uncertainty.

If a radical route restructuring plan carries too high a risk to firms, decision-makers must face some hard facts: the cost of subway construction will deter further expansion for years

to come, and buses will remain the dominant mode of public transport. Buses provide more efficient transport than passenger cars and are crucial to a city battling congestion. Finally, the government, heavily burdened as it is by subsidizing the subway system, cannot risk having to bail out bankrupt bus operators. In other words, the City of Seoul strongly depends on the continued financial viability of the private bus firms.

Although one government objective is to reorganize the bus system and integrate it with the subway, another objective—that of preserving the bus system's self-sufficient and privately operated status—takes precedence when the two conflict.

**Opposition To Change**

Another important reason for the failure to implement the integration plan was that it not only lacked widespread support but also encountered strong opposition. Its only real proponent was, and is, the Subway Corporation.

This organization, under considerable pressure because of huge deficits, wants to maximize revenues and system usage. Early projections of subway ridership were "wildly optimistic," (2) resulting in a shortfall of one million passengers per day. In 1987, farebox revenue covered operating expenses but contributed only marginally (less than 10 percent) to capital costs. The Corporation counts ridership to grow 6–8 percent annually and counts on fare increases to substantially raise this contribution (7). While the growth in ridership is not expected to come from the bus system alone—there is a natural increase as well as an effort to attract car commuters—

TABLE 3 SEOUL MODAL SPLIT BEFORE SUBWAY EXPANSION, 1985 (2, p. 22)

	Daily Trips	Share
Intracity Bus	10,344	64.7%
Subway	1,638	10.2
Taxi	2,533	15.8
Private Car	1,487	9.3
Total	16,002	100.0%

it is clear that if the bus network were fully integrated with the subway the Subway Corporation would be better able to achieve its objective.

Although the Subway Corporation is the organization pushing for change, it is the Transportation Bureau that should lead the way for any bus route restructuring. It is responsible for licensing and regulating bus routes, assigning the location of bus stops, conducting passenger surveys, etc. (6). However, the Bureau lacks the motivation to change the bus system. Its mission over the years has been to guarantee the stability of the system, and to do so, the Bureau tries to assure each company of a profitable route mix (6):

Thus where the relative profitability of one route is claimed by an operator to be decreasing, the City, if it accepts the operator's claim, compensates it by allowing more buses to be operated on its more profitable routes, or by allocating new routes to it which have good profit potential.

This has resulted in a route-change process driven by individual company requests and concerns. Transforming the bus system based on principles of system efficiency would demand a radical departure from the Bureau's current way of doing things.

Moreover, as the implementing agency, the Bureau would take the risk of making costly mistakes. High-risk projects are likely to be unattractive to government officials everywhere, but the rigid career paths in Korean society make officials particularly averse to risk. Hence, little initiative and even resistance to the integration plan came from the very organization which should serve as the natural leader for any such change.

The attitude of Bureau officials in part reflected their clients' (the bus companies) strong opposition to and effective lobbying against the plan. The operators' main contention was that an integrated route structure would be unprofitable; however, they also felt that the very nature of an integrated system would further infringe on their autonomy as businessmen. "Bus companies are pure private properties," says the Director of Seoul City Bus Association, "and don't want to have the government tell them what to do."

How is it in a country known for the forceful intervention by its government in economic affairs that a group of small bus company owners can be so influential? The most accurate answer rests on the fact that Seoul City depends on the continued viability of the private bus system. But another feature to the Korean system explains why bus owners get the ear of the authorities. It is a known, although undocumented fact, that during the growth in the 1960s and 1970s profitable bus routes were given as gratuities to persons close to the ruling group, such as military retirees. Therefore there are direct links between bus company owners and the ruling elite. Says the former project manager of the Government integration study, "The fact that 90 bus companies are in existence is a proof that all of them have certain political connections."

It is not clear that riders would benefit from bus/subway integration. The number of transfers would increase dramatically—one corridor study estimates as much as 40 percent—while total travel time would be reduced only marginally (6). Further, without combined route and fare integration, the cost of transportation to users would increase. The integration plan, if implemented, would therefore risk generating wide-

spread rider discontent, further eroding goodwill towards the government.

The gains to the public were not evaluated in terms of reduced road congestion, air pollution, and traffic accidents. In fact, city buses in Korea have an alarmingly high accident rate; for example, an average of 1.24 accidents per bus was recorded in 1978 (8). However, none of these issues have generated public protest and have not engaged citizens as a lobbying group for rationalization of the bus system.

### Bus Industry Structure

The fragmented nature of bus operations, as illustrated in Figure 2 (2, pp. 223–225, 228–233), is a factor that severely impedes major change. For one thing, it makes companies vulnerable even to very small changes (2):

Given the delicate relationship of each company on its existing routes . . . , and the complexity of the route system, a radical conversion of the current system is likely to lead to . . . unprofitability for many companies.

For another, the number of players which would have to be involved in a plan for change makes such an undertaking almost impossible. Not only are there some 80 unrelated bus companies to contend with, each also has a number of stockholders with considerable say in company operations. One manager interviewed indicated that any decisions on route changes are made at regular meetings with the seven stockholders.

A study made before the subway expansion pointed out the difficulties encountered by the bus system in adjusting to changing market conditions (6):

The role it [the bus system] is asked to fulfill is rapidly changing, and its weakness is in its slow adaptability under conditions of change. The major question is therefore how to devise an industry structure that preserves the best features of the current institutions while allowing for a greater level of flexibility to meet the needs of modern cities.

The government initially supported a recommendation to form 10–15 bus cooperatives in Seoul to consolidate the industry, a concept used successfully in smaller Korean cities (9). However, it has not gained acceptance among Seoul's operators, and has been dropped by government officials.

### COMPANY RESPONSE TO THE SUBWAY EXPANSION

How severe was the effect of the subway expansion? What spontaneous responses did it trigger among the bus companies? The following attempt to answer these questions is based on interviews with Seoul City Bus Association (SCBA) and five selected companies.

The following estimate was given by the SCBA Director: "All bus companies have been affected by the subway; the difference is a matter of degrees. We estimate that 30% have experienced a drastic ridership reduction, 40% a moderate and 30% a slight reduction."

He feels, however, that there are several factors that mitigate the negative effects and reduce the pressure on operators to take radical countermeasures. For one thing, the govern-

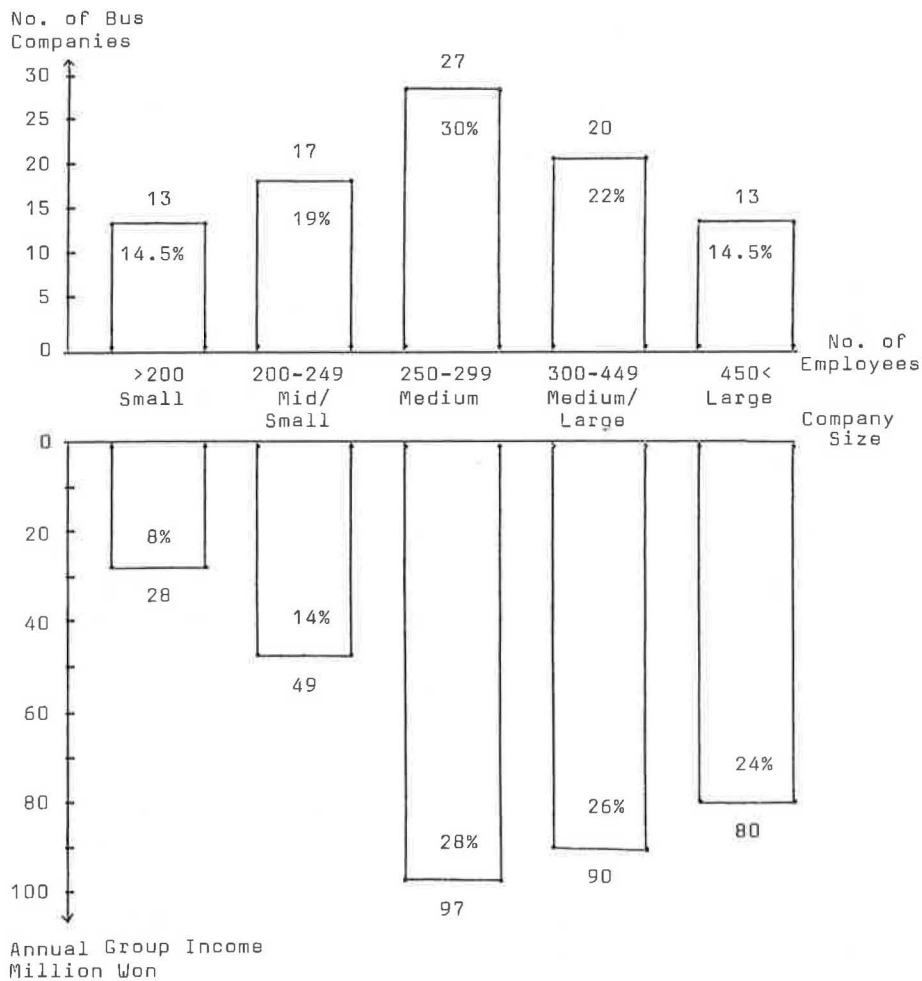


FIGURE 2 Bus company size by number of companies and annual income, 1984 (2).

ment has held the total number of vehicles constant since 1982, in spite of annual rider increases of 6 percent. Some companies therefore can afford a certain percentage drop in ridership without operating at a loss, according to SCBA. For another, companies expect that the government will allow a fare increase sometime within the next year. The Director's view is that most operators, at present, can weather the effects of the subway expansion. It may, however, become more critical in three to four years, when the issue of fleet replacement comes up for a large number of companies. Some firms are struggling now: these are small companies that depend on one or a few routes with significant ridership decreases, and financially troubled firms that are vulnerable to even marginal deterioration of business.

Five such companies were interviewed to get firsthand information on how they have responded to pressure for change. All operations described in Table 4 operate and depend on trunk routes that compete with a subway line opened in 1985.

**Non-Radical Response**

While the reported drop in ridership is similar for the five companies, three developed a non-radical response to these decreases. The response consists of traditional measures such

as lobbying for a fare increase and seeking compensatory route adjustments from the Transportation Bureau.

One of the companies who used this response is Company 1, whose only route, previously very profitable, is badly affected. The company is living off the wealth that it has accumulated, but reports that business will have to improve by the time vehicle acquisition appears on the agenda.

Company 2 is equally small and dependent on a route with high ridership decline. In addition, however, it is such poor financial condition that the owners are thinking of ways to get out of the bus business, i.e., to provide taxi or minibus service. It would like the government to authorize conversion of bus permits to taxi licenses.

Company 4 is medium-sized, operates four routes and is in fair financial condition. But it shares a business development problem with the two other operators: while the new subway line basically has rendered the trunk routes obsolete, the company's depot location is such that it makes it very difficult to take advantage of new route opportunities in outlying areas.

**Radical Response**

The two operators that took radical action did so in different ways: one sold its operations to a larger company, the other initiated cooperative operation with a competing firm.

TABLE 4 FIVE SELECTED COMPANIES, 1984 (2, 150-, pp. 222-225, 228-233, 239)

Company	1.	2.	3.	4.	5.
Size <sup>a</sup>	small	small	mid/ small	medium	medium
No. of Routes:					
Citybus	1	2	2	3	2
Seatbus	0	0	1	1	1
Riders/Day:					
Citybus	74,088	60,145	70,173	96,756	82,865
Seatbus	-	-	4,301	3,597	7,762
Fleet Size	49	53	63	92	85
Net Profit/ Vehicle <sup>b</sup> '000 Won	2,367	(101)	437	631	49
Debt as % of Total Assets <sup>c</sup>	66.8%	154.2%	187.8%	89.7%	69.5%
Financial Position	very good	poor	poor	fair	fair
Reported Rider- ship Decrease 1987 <sup>d</sup>	-20%	-15%	-20%	-15%	-20%

a/ Measured by the no. of employees: >200 (small); 200-249 (mid/small); 250-299 (medium); 300-449 (medium/large); 450 < (large).

b/ Median all 90 companies: about 500,000 Won. \$1= about 850 Won.

c/ Mean all 90 companies: 97.9%.

d/ Based on interviews.

Company 3, which sold out, was in financially precarious condition before the subway opened. The new owner, after making managerial improvements, is operating basically the same routes at a satisfactory return. The operator plans to serve the growing demand for feeders to the subway from areas further out in the corridor. The purchase of Company 3 placed it in a strategic position to do just that.

According to SCBA, the number of companies for sale has increased. In the first months of 1987 there were five companies for sale as opposed to a total of ten since the beginning of the 1980s. The most important reasons for this increase are acute financial crisis and the perception of a declining market. Most buyers are other companies: therefore, continuing market pressures may cause spontaneous consolidation of the industry.

Company 5, which initiated cooperative operations, shared an intercity route with a competitor that faced competition from train and local bus operators in addition to the subway. The two companies that now cooperate in operating the route have maintained their profitability by cutting the number of vehicles on the route. This is a measure that, in fact, rarely is taken unilaterally by an operator. The reason is (6):

... that there are competitive pressures on operators to run the maximum number of buses at all times, since the share of revenue along the main corridors between operators will be determined principally by the relative number of buses.

The bus cooperatives established in other Korean cities have in some cases led to both vehicle and route rationalization schemes (9). With the exception of the one cooperatively operated route in Seoul, the concept has won no supporters. The companies interviewed quote the number of operators and the complexity of routes as obstacles. But in truth, the pressures may not yet be sufficient to force more companies to consider joint actions.

## CONCLUSION

The city government backed off from the plan in 1985 to integrate the bus and subway systems in the face of financial risk, political opposition, and bureaucratic resistance. These impediments to change are aggravated by the existence of a fragmented bus industry structure.

The government could, at the time, choose to do nothing because integration did not arise as a response to acute crisis. The financial condition of the Subway Corporation has since deteriorated, forcing the city to request assistance from the national government. Whether or not such assistance is granted, Seoul City is likely to experience increased pressure to seek maximum return on the subway investment, thus moving the issues of proper feeder services, fewer competing bus trunklines, and fare integration higher on the agenda. The Subway

Corporation approached Seoul City Bus Association with a feeder bus proposal in May 1987, a sign of the growing urgency of bringing about bus/subway integration. Not surprisingly, the proposal was immediately rejected.

Most bus companies are exposed to the changing and, in their view, declining market conditions. The government, by failing to act at the time of the subway expansion, in fact forced private operators to deal with the effects of declining ridership. Interviews conducted for this research show that some of the smaller firms are adjusting to the decline with difficulty. The consequence may well be a further increase in the number of firms for sale, resulting in a spontaneous process of industry consolidation.

The government is discussing changing its policy from one that seeks to stabilize the industry by keeping all firms in business, to one that would let less efficient operators go out of business and support consolidation. As a consequence the government is considering abolishing current tax disincentives for large operations.

The climate of increasing difficulty for small firms and the subsequent consolidation of the industry can establish the foundation for a constructive dialogue between government and bus operators on how to reorganize the bus system and achieve bus/subway integration, to secure the continuing financial viability of a privately operated bus system.

## REFERENCES

1. Gabriel Roth and George G. Wynne. *Learning From Abroad: Free Enterprise Urban Transportation*. The Council for International Urban Liaison, Washington, D.C., 1982, pp. 7-38.
2. Korea Institute of Transportation Studies (KITS), URBA/SRI International. *Seoul City Public Transportation System Improvement Study*. Final report. 1986.
3. Transportation Bureau, Seoul City Government. *Bus System Operating Statistics*. 1986, pp. 119-143.
4. Urbi-Tran Associates, Barton-Aschmann Associates, KAIST Software Development Center. *Seoul Transportation Improvement Project*. Final Report, 1983.
5. Leroy P. Jones and Il Sakong. *Government, Business, and Entrepreneurship in Economic Development: The Korea Case, Studies in the Modernization of the Republic of Korea 1945-1975*. Council on East Asian Studies Harvard University, Harvard University Press, pp. 78-140.
6. Korea Advanced Institute for Science and Technology (KAIST), Software Developing Center, Ministry of Transportation. *Urban Public Transport Operations Study*. 1984.
7. Seoul Metropolitan Subway Corporation. *Subway Operating Statistics and Projections*. 1987, p. 10.
8. KAIST, Regional Development Research Institute. *Urban Transportation Problems and Policies in Korea*. October 1980, p. 321.
9. Jaimu Won. Bus Cooperative Systems in Korean Cities. *Transportation Quarterly*, Vol. 40, No. 2, April 1986, pp. 277-287.

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