APPROACHES TO PUBLIC TRANSPORT OPERATION SYSTEM WITH RESPECT TO SOCIO-ECONOMIC BACKGROUND AND ORGANIZATIONAL STRUCTURE
- A Case Study of Songtaew Sector in Khonkaen, Thailand -

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This study aims to clarify the progressing characteristics of public transport operation system named 'Songtaew', both in general and in multi-relative effects on the transport sector. The specific objectives are to investigate the socio-economic aspects and organizational structure based upon the mutual interaction among the government, operators, drivers, and passengers. We found that the Songtaew sector's role has regarded to the basic needs among the points of employment, investment and residence, with quick responding on the operation service and appropriate organization. According to the open market strategy, it is automatically competitive and effective regarding to organizational structure mechanism, both the equivalents of shareholders in the co-operative form and the direct trading in the private company form.

1. INTRODUCTION

Local public transportation plays an important role in implementing the fundamental components in respect to monitoring the transport system measures upon the real sector. 'Songtaew' is a modified four-wheeled vehicle with two rows of longitudinal upholstered benches on the backside as shown in Fig. 1. It seems to imply a wide degree of integration and co-ordination of local demands and supplies via various transport modes, as well as informal and formal transport operations. Thus, they require an approach to understand and define the environmental communities as the representative of cultural achievement. Some researchers from various disciplines have investigated the diffusion of local public transport operation services to individuals, and reviews of literature (Leinbach 1987, Kidokoro 1989) classified the questions of servicing modes, with the graded description composed of various types. Thus, the existing condition of Songtaew in Khonkaen has been pointing as an agent of urban development introducing changes in the structure of community and pattern of behavior.

The research attempts to clarify the local public transport named 'Songtaew', both in general and in its relative effects on the transport sector via the multi-modal contexts, which will become an important factor in the formulation of criteria guidelines for urban development. The specific objectives are to examine the Songtaew characteristics emphasizing the organizational structure related to operation service, the effects of the operation system via the involvement of government, operators, drivers, and passengers, and to scrutinize in regarding to socio-economic relations. Thus the data, therefore, is collected by direct interviews with all components of the Songtaew sector and through questionnaires to highlight the analyses in forming the hypothesis.

2. CHARACTERISTICS OF SONGTAEW

(1) Performances of Songtaew

Up to the operation service, each vehicle is registered as a public vehicle using a yellow colored number label with a marked symbol of each operator's occupation. The driver is required a public service driver's license, assigned to the minimum age of 25 years old, standing as a member of each operator by paying the route-sublet fee to hold the right on servicing. They fairly have low educational backgrounds, since education level is not requisite as indicated in Fig. 2. The majority of drivers are based upon the secondary school level with relied on age 31-45 years old. A monthly member fee for maintaining queue management, transit station using, and insurance for traffic accidents, is submitted and differentiated to each occupied operator, with the membership able to be transferred to other hands through direct trading. The monthly income is averaged 3000-6000 baht comparative with the average income of labor workers as shown in Fig. 3. On the demographically characteristic survey of patronage, the majority is clustered among the age period of 14-19 years old, related to the work classification patronized by students, government employees, private sector workers, and traders, respectively, as illustrated on Fig. 4. Students represented nearly 70 percent, obviously dominate and imply the significant role of Songtaew operation service. Since dominant patronage earn a monthly income of less than 5000 baht and prohibit on the vehicle ownership; 5 baht for adults and 4 baht for students in uniforms are the minimum flat rate of public transport service provided in urban areas, with a negotiated fare between each driver and passenger spent on the individual route service. Generally, the fare is directly paid to the driver after alighting and unofficial in advertisement, with the satisfaction on the fare price shown in Table 1. This figure indicates that 62.1 percent on servicing condition's satisfaction accept the fare price as the main priority based upon their in-
comes with servicing choices. Songtaew operators manage their own queues, which are normally located at starting and returning points approved on each specific concession, since the service characteristic is the on/backward lined loop type. All operating routes have their own terminals separated by commercial area relations, and most of them are overlaid with each other especially on the trunk roads as shown in Fig. 5. An important point of route pattern is serving along attractive destinations for taking advantage of the patronizing volume, rather to provide a complementary route network for all demands. Songtaew operation service is deeply representative to the actual action of any public services in Thailand.

(2) Regulations of Songtaew

The Songtaew operation system directly belongs to the Department of Land Transport, the Ministry of Transport and Communications, which stipulates the criteria of servicing permissions and conditions via the transport legislation (1979). Not just vehicles, but also drivers have to be registered as members of Songtaew operators formed in any co-operatives, private companies, or business establishments that hold the concessions of each fixed servicing route approved by the Land Transport Department of each province. Each concession is permitted for a duration of 7 years, under these following conditions: the quantity of vehicles assigned such the minimum and maximum number, the operation service headway at various times, and the period of operation service. As a procedure, any qualified interests have to submit tenders under the control of the provincial institution for holding the permitted certificate. As legislative regulations, the numbered plate, vehicle's colored body, and registered symbol depended upon each operator's concession distinguish each servicing route. It also covers the fare rates, tax assignments, and driver's qualifications.

(3) Organizations of Songtaew

Comprehensively, the term 'Songtaew' is viewed as an organization trending small in scale, unregulated in practices, flexible in service, and almost invariably private, whilst the real situation is more regular than only the viewpoint of informal sector. The Songtaew organization is informal in nature, but also based upon points of governmental organizations with the recognition of mutual benefits. As surveyed, 6 co-operatives and 2 private companies have been allowed to operate on a total maximum fleet of 825 vehicles with 751 vehicles in actual operation as shown in Table 4. The co-operative seems to be popular in Khonkaen, since its organization is a multi-operator enterprise, which deeply supports the inadequacies in low-level capital investment. Regarding the co-operative system, every member appears as a Songtaew driver who is required to own at least one vehicle for standing as a shareholder. Significantly, each co-operative has to keep the members owning the number of vehicles as each concession's requirement and cull a group working an administrator to support all members in route arrangement, queue adjustment, fuel service, vehicle maintenance, tax and insurance assistance. In case of private companies, the Songtaew sector is a business operating on low overheads with small investments monopolized by the owner.

3. CONSIDERATION ON RELEVANT INVOLVEMENT OF SONGTAEW COMPONENTS

1) Government Involvement

According to the structure of operation system, it reflects political and economical distributions to related sectors especially among operators, develops from the central
government via transport legislation and provincial institutions, as significant as artificial enforcement illustrated on Fig. 4. Although the enforced regulations on unqualified operation services are able to hold over the concession and re-assign the existing functions, the lack of clear responsibility prevents effective and systematic solutions. Matters of law provide the opportunity of flexible functions to approach the different individual conditions in each provincial demand, varied upon the amount of local resources. The Songtaew operation system is workable beyond the direct legislation enhancement since the informal activities are widespread, thus the governmental provision is seemed to be subordinate. Matters of law provide the opportunity of flexible functions to approach the different individual conditions in each provincial demand. Particularly, it serves the transport demands through the strategy of self-sustaining economic development, which stimulates the local levels to generate their own economic growth structures with a small vehicle able to submit to the quick financial return on the first capital investment. Less strict qualification on employment indicates the real terms of economic development and systematically approves to eliminate the investment's barriers. However, the open market mechanism is efficient in results, but it needs balanced control in the appropriate growth of the Songtaew sector.

2) Operator Involvement

The operation system is commonly controlled from the government, however its actual effectiveness is dependent upon the philosophical assumption, technical employment, and management methods of the operators who hold the route concessions. Whilst the co-operative form is considered the equivalent of shareholders that keep the organization's economic mechanism effective automatically in both of operation system and service, and the private company is indicated in the commercial employment with less participation. On the open market mechanism, the operator is viewed as a starter and a whole-manager of the organization, since local demands are supported directly by local suppliers. It plays a consequent role to bring a crude equilibrium on each component's demands in each time, and accommodate any flexible activities in the operation system. With different aims of various operators, rich of mixed transport modes, evolve in various levels of affordability in both of the operation system and service. Although the Land Transport department considers the service route, it deeply relies on operators who hold concessions in the long term with the political interference. Without controlled by conventional schedules, the competition amongst drivers and queue management for high profit routes are encountered in mixed traffic conditions. Such an overcrowding service to get as much as profit by disregarding safety, a route cutting before lined loop completing, an incorrect display of destination, and fee information, generate traffic hazards. However, this is the dilemma, the controlled regulation is required for Songtaew operators, but the strong enforcement would unpredictably bring conflicts to all of components.

3) Driver Involvement

The Songtaew driver career is viewed as a low-level work in Thai society since its low educational qualification. The important advantage of this career is independent under operators' regulations, thus the drivers are able to manage their own working schedule and conditions. Although the scheduled service is designed on each concession, its actual operation is re-arranged automatically by the individual groups of drivers and operators themselves to adjust their performances based upon the passengers' demands. As 'on board' surveyed, the peak period normally occurred throughout weekdays, the traffic volume thus is

![Fig. 5 Songtaew operation servicing routes in municipal area, Khonkaen](image-url)
continuously high on educational areas and trunk routes. Since various activities in rapid changing communities are complicated to plan, the small sector is suited to be quick responding in any flexible situations. As interviewed, most of drivers have rarely seen their own operators directly, just share any information among drivers, it results in the poor control on the organization’s management and reflects to the servicing quality. The driver is the real sector in fare controlling, which fare structure can be specified in terms of fixed and variable parts depending upon specific areas; flat fare is normally used in urban areas and mileage fare in the lower volumes of patronage.

4) Passenger Involvement

Songtaw passengers effect the characteristic of operation service in both direct and indirect act such parking places, the queue’s positions, and servicing conditions. High demands occupied by students are associated to the low vehicle ownership level without alternative choices. Moreover, the traditional home to work based trip is distributed to itinerant street traders influenced to the luggage service, which is advantageous in servicing choices. The passengers are variously mixed in all kinds of occupations, ages, and incomes, thus it stands as the basic public transport supplying on any demands. Within the constraints of available time and money criteria, passengers generally accept the Songtaw facilities to reach their destinations such schools, commercial areas, and offices, respectively, in which the fare becomes the main priority for decision making. In 1988, the conventional minibus had introduced, sponsored by the government in an attempt to alleviate the selections. However, the fare level is similar, but it was incapable to seize the patrons’ demands, because of its frequency and familiarity. The development of public transport system exhibits a certain ‘behavior’ which is the product of various processes and pressures.

4. CONCLUSION

Low incomes and insufficient investments are caused to the level of motorization, thus small vehicles and appropriate organizations tend to be compatible in wide choices of public transport modes with their potentials such the quick responding on both operation service conditions and first invest-returning, the governmental investment barriers elimination, and the competitive sustainability. The efficiency of local public transport system is greatly influenced by its management, which has multi-modal involvement, acknowledged on the part of formal aspects and regulations fulfilled by the extensive informal activities. The organizational structure automatically keeps competitive and compatible due to the equivalent shareholder in the co-operative form and the direct trading in the private company form based upon the open market mechanism. The Songtaw sector is defined to have advanced apparently self-sustaining development without the direct need of governmental assistance, however, the government should be responsible for the dissemination of this improvement in knowledge through the appropriate strategy. For further improvement, it has been suggested to develop the operation network and complementary services, sharing via the co-operative structure.

NOTES

1) Khonkaen, the central province in Northeastern of Thailand has been implemented and achieved as the center of invest-