

The Role of Paratransit in Thailand Considering the School Travel Pattern in Khon Kaen

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In Thailand, paratransit plays a role as the dominant transport mode in many urban areas. Specially, Songtaew or a modified pick-up truck taking passengers on the back with an overhead cage and two row seats in the back that can accommodate up to 18 passengers, operates as a main public transport mode in many medium-sized cities of Thailand. This mode is popular because it is more flexible and cheaper than other transport modes particular for students who have limitation on mode choice selection. However, the study on school trip have not yet well understood. Therefore, the main objective of this paper is to investigate the role of Songtaew service focusing on examining the school travel pattern of the high school students in Khon Kaen city, the capital of the Northeast region. In the absence of statistics regarding school trip making in the city, a questionnaire survey has been undertaken to determine demographics, mode of travel to school, travel cost and duration, factors influencing transport modes of school travel and the student satisfaction with Songtaew service. Based on the analysis, it was found that the most of senior high school students who already have motorcycle license going to school by motorcycle. On the other hand, the junior high school students have gone to school by taking Songtaew more than the other modes. For the student satisfaction with Songtaew service provided in the city, the overall satisfaction reflects that generally all students who use Songtaew going to school are satisfied with Songtaew service. This study also discusses the improvement of Songtaew regarding the travel attributes that scored low in satisfaction, in order to maintain existing student users and attract new passengers. These improvements will make Khon Kaen city more sustainable and reduce the use of private vehicle especially motorcycle in the future.

Key Words : *Paratransit, Songtaew, School travel pattern, Satisfaction, Khon Kaen, Thailand*

1. INTRODUCTION

Currently, paratransit or informal public transport is a predominant urban public transport mode in developing countries, especially in Thailand where has various types of paratransit such as motorcycle-taxi, Tuk-tuk, Songtaew, and Silor-lek. Specially, Songtaew or a modified pick-up truck taking passengers on the back with an overhead cage and two row seats in the back that can accommodate up to 18 passengers or more, operates as a main public

transport mode in many medium-sized cities of Thailand.

Studies regarding paratransit in Thailand are mainly concerned with issues such as the role of paratransit focusing on service characteristics, service quality and user satisfaction of the service specially in Bangkok area. This study is the first attempt to focus on the role of Songtaew service in the medium-sized cities in Thailand for identifying problems and suggesting the recommendation relating to improve Songtaew service which is popular mode in

city and particular for students who have limitation on mode choice selection. However, the study on school trip pattern have not yet well understood.

Therefore, the main goal of this paper is to investigate the role of Songtaew service focusing on examining the school travel pattern of the high school students in the city. Therefore, this paper corroborates the authors' hypothesis regarding the decision of selecting the transport mode for going to school that there is a significant difference decision among the students who have vehicle licenses such as motorcycle license about the school travel pattern in Khon Kaen city.

This paper begins by providing the background and motivation of the study, followed by some brief information about Songtaew in Khon Kaen, the research methodology, the data collection. Finally, the paper concludes with the findings of the school travel pattern and the Songthaew user satisfaction focusing on students' perception.

2. BACKGROUND AND MOTIVATION

Songtaew in Thailand is modified from a pick-up or a larger truck with two rows of seats in the back carrying about 18 passengers. Presently, Songtaew provides passenger movement in both within towns and cities and for longer routes between towns and villages. Moreover, Songtaew is known as one of the major means of transportation in the urban areas and even in the rural areas in Thailand. This mode is popular in Thailand because of its intermediate size which can easily move around the area even the smallest interior areas. Furthermore, Songtaew is more flexible and cheaper than other transport modes in many cities of Thailand. The price is usually between 8 or 10 baht per journey. As a result of the large number of population in Thailand, the number of registered Songtaew has been increased substantially in many cities such as Nonthaburi, Hat Yai, Nakhon Ratchasima, Chiang Mai, Khon Kaen, Chonburi and Nakhon Si Thammarat.

In Bangkok Songtaew is a ride-sharing pick-up truck because of the lack of the bus service along local street (Oshima et al., 2007) and plays a role as a feeder of mass transit system especially the Metropolitan Rapid Transit (MRT) and the Bangkok Mass Transit System (BTS) (Tangphaisankun, 2010). In cities especially in the regional capitals and medium-sized cities of Thailand Songtaew operates as a main urban public transport which is served areas along the main and local street with fixed route.

According to the future planning for urban public transportation in medium-sized cities of Thailand,

Khon Kaen, Chiang Mai, and Nakhon Ratchasima (Jaensirisak et al., 2013) are interested and in the process of BRT planning. The feasibility studies have been already studied in those cities, but only Khon Kaen city has been in the process of detail design (Jaensirisak et al., 2013).

Therefore, this research is focusing on the role of Songtaew in Khon Kaen city where there are the studies only about the new transport mode, BRT, and the preparation progress of BRT is fastest among the other cities but the existing urban transport mode, Songtaew in khon kaen, has not been studied about the possibility of Songtaew service continuing in the future yet, especially the studies related to its role in Khon Kaen urban transport and its user perception.

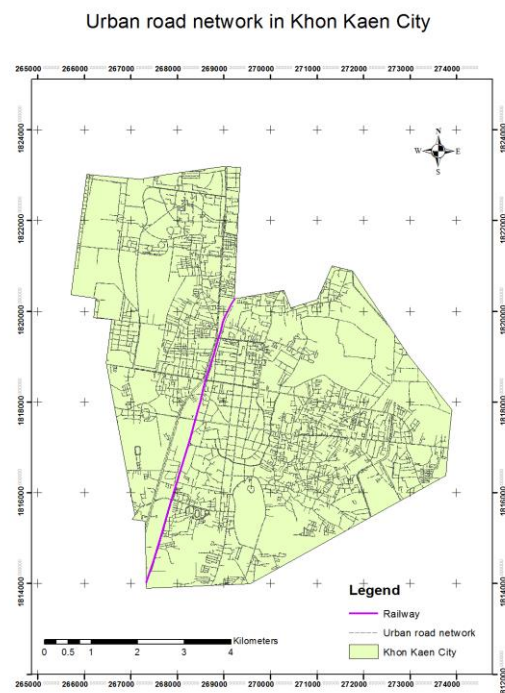


Fig.1 The study area : Khon Kaen city

3. OVERVIEW OF SONGTAEW IN KHON KAEN

Based on the existing public transport information studied in 2013 by Jaensirisak, there are a total of 13 Songtaew service routes in Khon Kaen city which are operated by the private sector. This study can be summarized as follows: the average number of hours of work is 12 hours; the average fare is 5-10 Baht; Songtaew dispatch frequency is every 10 minutes; the average net income per day is 320 Baht; the average maintenance costs is 8,600 Baht per year; the highest expense on fuel is 500 Baht per day and the most frequent drop-off spot is Khon Kaen Bus Station (Jaensirisak et al., 2013).

Table 1 Service supply characteristics of Songtaew in Khon

Kaen.

Elements	Values
Vehicle capacity (person/vehicle)	20
Average operating speed (km/h)	15
Travel time (one way) (h)	0.50
Vehicle operation rate (1/h)	2
Average route Length (km)	18

Source: S. Jaensirisak, et al. (2013)

As shown in Table 1, Songtaew can accommodate up to 20 passengers on any trip. Furthermore, the average operating speed is 15 kilometers per hour, travel time for one way trip is 50 minutes and the average route length of Songtaew is 18 kilometers. Moreover, the daily hours of operation for all service routes of Songtaew are almost same. The number of service round per day is ranged from three trip per day to eight trip per day. The daily fuel costs is ranged from 300 to 500 Baht which most of the fuel used is diesel, CNG, and LPG, respectively. For the maintenance costs, it is shown that Songtaew's maintenance costs for all service routes are ranged from 5,000 Baht to 9,600 Baht. Moreover, some cost elements such as routing costs, fuel costs, and maintenance costs are very wide range depending on the route length of each route.

4. RESEARCH METHODS

A comprehensive field survey of students was carried out for investigating the school travel pattern and the satisfaction with Songtaew service of the high school students in Khon Kaen city.

To study the travel pattern and the satisfaction, we analyze results from a questionnaire survey conducted among the junior and senior high school students in Khon Kaen city, in order to examine their school travel pattern and measure their satisfaction with the Songtaew service provided. The surveys were carried out on interviewing randomly selected students in high school where located in Khon Kaen city. Then descriptive statistics and travel behavior analysis are applied to examine the school travel pattern and the satisfaction of Songtaew.

5. DATA COLLECTION

Students from high school in Khon Kaen city were sampled as respondents. The questionnaire items were divided into four components: (1) individual information such as gender, age, household member, driving license, car and motorcycle owning and

home address, (2) household characteristics such as the interaction of family members relating to the school morning commute, their school location, and their arrival time at school, (3) detailed information on the school morning commute such as travel mode, travel time, the location of departure and alighting of the public transport (Songtaew) as well as its route number, waiting time and transport cost, and (4) student satisfaction with Songtaew service relating to the factors such as availability, information, accessibility, fare, service safety, reliability, comfort and so on. Thus, the travel attribute regarding the user satisfactions which are facilities at Songtaew stop, cleanliness of vehicle, seat comfort, crowding, availability of service, ease of entering and exiting the vehicle, ease of payment, network coverage (number of routes), cost of travel, driver behavior, journey time, waiting time, safety in the vehicle, personal security, etc. were consisted in the final part of the questionnaire.

6. RESULTS AND CONCLUSIONS

Based on the questionnaire survey, there are 19 routes were identified for respondents using Songtaew going to high school in Khon Kaen city. The findings reveal that the present main modes of travel to school in Khon Kaen city are Songtaew, motorcycle, car (escorted by their parents/family members), and walking, respectively. There are also exist significant differences in mode choice among the students who have driving licenses and the students who don't have driving licenses, younger than 15 years old. As a result, the most of senior high school students who already have motorcycle license going to school by motorcycle. On the other hand, the junior high school students have gone to school by taking Songtaew more than the other modes.

The findings about the satisfaction reveal that the students who use Songtaew for going to school in Khon Kaen city have different satisfaction among the students who always use Songtaew and the others who usually use motorcycle but sometimes using Songtaew regarding the characteristics of them such as gender, age and the status of owning the driving license. The overall satisfaction reflects that generally all student users are satisfied with Songtaew service because of the flexible of route and the cheap fares for going to school.

For the further work we will discuss the improvement of Songtaew regarding the travel attributes that scored low in satisfaction, in order to maintain existing student users and attract new pas-

sengers. These improvements will make Khon Kaen city more sustainable and reduce the use of private vehicle especially motorcycle in the future

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