Customer Satisfaction Towards The Interchange of Chatuchak MRT Station

Paper Identification number: YRF13-049

Saowapha BOONAIEM[1], Sai Nyi Nyi AUNG[2], Djoen San SANTOSO[3]

[1]Transportation Engineering, School of Engineering and Technology,
Asian Institution of Technology
Telephone 0-2524-6051 Fax. 0-2524-5509
E-mail: saowapha_mai@yahoo.com

[2]Transportation Engineering, School of Engineering and Technology,
Asian Institution of Technology
Telephone 0-2524-6051 Fax. 0-2524-5509
E-mail: sainyinyinaung7@gmail.com

[3]Construction, Engineering and Infrastructure Management,
School of Engineering and Technology, Asian Institution of Technology
Telephone 0-2524-5534 Fax. 0-2524-5509
E-mail: djoensan@yahoo.com

Abstract:

Interchanges play an important role in transferring passengers to other modes. They connect two or more modes by providing comfortable, easy, and safety way to move from one to another, which at the end reduce the total travel time to their destination. Chatuchak Park MRT Station is one of the crowded rail stations in Bangkok for both weekdays and weekends. The interchange of this station connects passengers to BTS skytrain, public van and bus. Considering the importance of this interchange in supporting multimodal transportation, passenger satisfaction towards this facility was analyzed in this study. Five components of interchange were considered: accessibility, connection, information, amenities, and security. The result indicated that most passengers were satisfied with Chatuchak interchange, especially in the aspects of accessibility and connectivity. It is also found that satisfactions on accessibility and amenities were significantly influenced by age and income level. Therefore, MRT operator has to consider these factors in improving their services to provide better service to passengers.

Keywords: Interchange, Mass Rapid Transit (MRT), Customer Satisfaction, Bangkok

1. Introduction

Interchange facilities are hubs that link public transportation together to form a network. It transfers passengers to other services which can be made easier, quicker, and more convenient. Moreover, it encourages city growth in term of social about society interaction, economic that are about tourism and travel time decreasing to reach job areas, and reducing environmental impact such as noise from vehicle engines and cleaner air quality because of number of vehicles in traffic reduction.

Bangkok which is the capital city of Thailand and confronts to traffic congestion problem seriously has seven major interchanges that link to rail system. Three of them link between MRT station and BTS skytrain station that are Chatuchak park station connect to Mochit station, Sukhumvit station connect to Asok BTS station, and Saladang station connect to Silom BTS station. Furthermore, government provides linkage for tourism traveling to Suvarnabhumi international airport by BTS skytrain at Phayathai station and MRT station at Phetchaburi. In addition, there are provided connection between MRT mode to ordinary train at Hualumpong station and one more interchange links to

BTS skytrain and Bus Rapid Transit (BRT) at Chongnonsi station.

Chatuchak interchange is very crowded both weekday and weekend because the location is near Chatuchak market which is popular for tourists and Chatuchak park that is public recreation and their services from 6.00 to 24.00 everyday. From the interchange, people can walk to market and park around a few minutes. It provides frequent train, subways and bus links.

The Chatuchak station connects to Mochit skytrain Station. The length and width are 336 meters and 30 meters respectively. The depth is 17 meters and the type of platform is central. There are four exits in the station[1].

2. Characteristic of interchange

Report of California Department of Transportation demonstrated about five categories that are standard of interchange about facility's physical attributes for travelers. There are access, connection and reliability, information, amenities, and security and safety[2].

First, accessibility is a function of facility design by physical infrastructure and the management of passenger flow, directional information provided to travelers either inside or outside the facility. Stairways, elevators and escalators are examples of inside physical infrastructure while outside the facility include parking structures. Second is connection and reliability, the connection deals with the distance and time needed for passengers to complete their transfer. A transfer facility should be designed for passengers who make a transfer do not have to walk long distances with pleasant environment. Reliability deals with how well the schedule adherence of vehicles is available. Third factor is information. The criteria are divided into what, where, and how the information is communicated to facility

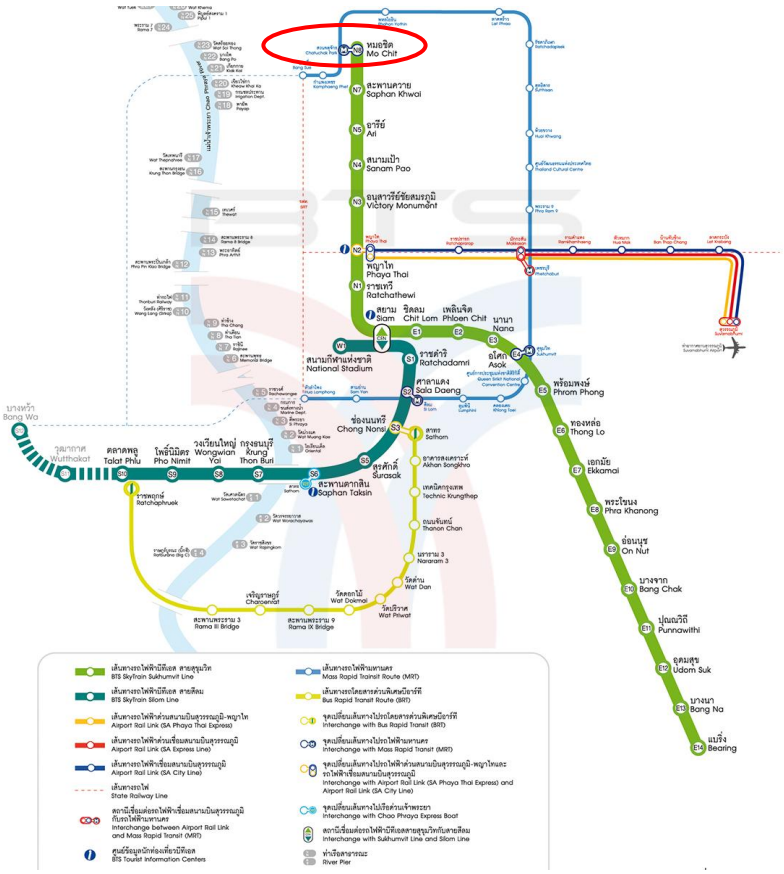

Fig1. Mass Rapid transit connection in Bangkok

Source: Department of Transportation, Thailand, 2011

users. There are numerous types of information that are station name, entrances, exits, maps, schedules, purchasing tickets and fares, directions to gates, and arrival/departure times. Information can be provided to users either outside or inside the transfer facility and can be conveyed visually on television or computer monitors, posted signs, and paper, or orally by audio announcements of recorded or real-time information. Next, amenities provided travelers to feel comfort, convenience, including cleanness in meeting point area, shops, seats, toilets and so on. Finally, security and safety that cover having security personnel and video surveillance equipment, CCTV, extent of visibility and lighting, means of communication for emergencies, and police sub-stations.

Turning to consider about Thailand existing facilities, they are many problems especially accessibility and connection. In term of access, the entrances complicate to transfer to public transport excluding BTS. When customers get off the MRT station to transfer to public bus, they cannot go to bus stop directly, see Fig. 2. As for connection, linkage between MRT and BTS entrances has gab which do not have shelter for pedestrian way, it is necessary when raining[3].

Due to above problems, Chatuchak interchange is not efficiency and currently Thailand does not have standard of interchange to control so this paper studied about customer satisfaction for Chatuchak interchange by follow the five characteristics of USA standard. It can be a reference for improving the MRT system interchange in Thailand.

3. Customer satisfaction

The Literature and customer views of satisfaction have many significant differences in the definition of satisfaction. When examined as a whole, three general components can be identified: 1) customer satisfaction is an emotional or cognitive response, 2) the response from expected product and consumption experience, and 3) the response occurs at a particular time. Customer responses followed a general pattern similar to the literature.

The literatures and customers also recognize that this affective response varies in intensity depending on the situation. Response intensity refers to the strength of the satisfaction response, ranging from strong to weak including neutral level. The focus identifies the object of a customer's satisfaction and performance. And this study use some responses for identify customer satisfaction.

Fig. 2 Entrances and bus stops of Chatuchak Station

4. Methodology

This paper studied about customer satisfaction at MRT interchange by conducting questionnaire survey to the customer using the interchange. Research studies and reports related to interchange were used to support in preparing and designing the questionnaire.

Questionnaire covers 3 *parts*; demographic, modes to reach the interchange and customer satisfaction. It is expected that not only Thai people using the interchange, so the questionnaire is prepared in two languages: Thai and English. Pilot study was conducted to both languages. Ten AIT students were approached to review the English version and ten Thammasat students for the Thai version. After revising the questionnaire from the inputs of pilot study, survey was conducted both inside and outside the MRT interchange from November 8-10, 2012. Respondents were directly approached and survey administrators were stand-by nearby to assist them if they need any help. Respondents were asked about

their satisfaction on the factors grouped in five major categories: accessibility, connection, score from 1 (very dissatisfied) to 5(very satisfied). A total of 110 samples were collected with *92%* confidence interval following W.G.Cochran technique which is no exact number of population[4]. Respondents cover both Thai and foreigner customers by quota sampling.

$$n = \frac{P(1-P)Z^2}{e^2} \qquad (1)$$

n is sample size, P is sampling proportion of population , Z is confidence interval and e is proportion of error

$$n = \frac{0.4(1-0.4)(1.7)^2}{(0.08)^2} = 108.38 \approx 110$$

5. Data analysis

5.1 Customer satisfaction

The results of the study is presented in Figure 3 with access characteristic attaining the higher average score on the left side and security group with the lowest average score on the left side. Access has an average score of 3.74 out of 5.00. The second factor is connection with average score 3.71. Then information and amenities are lower with 3.57 and 3.52. The lowest score is security factors with 3.51.

In access category, the availability of several public modes around the station and easy access by private vehicles due to information, security, and amenities by giving

provision of free park and ride parking provide a positive value to respondents with a mean value of 3.92. Public transports are both land transit such as bus, van, and paratransit and rail transit such as subway (MRT) and sky train (BTS). The operation period, which is from 06:00-24:00, also received high score from respondents. The meeting point area looks modern with various shops available to serve customers who are waiting for friends, so this factor also received good response. One factor that relatively low in the accessibility category is the seating facility of the interchange, with a score of only 3.2. Disable facilities also need to be improved as the score is also relatively low. May be because of only a small group of handicapped people using the facility, it does not get much attention from the operator. However, for the equity of service to all, the provision of disable facility should get better attention.

Transfer factor obtained high score in connectivity category because of ease to link to other modes (3.90). They can walk through by short distances for getting on another mode. In contrast, pedestrian is the lowest score in connection factor (3.55). Due to no shelter for sunburn and rain prevention, people do not satisfy.

As for information factor, entrance and directional signs are high score with 3.81 and 3.77. They give clear information for

Fig. 3 Average score of customer satisfaction at Chatuchak Park interchange

customers by using text, number, and picture which are easy to understand. On the other hand, MRT organization does not provide too much because the organization provide many board maps .They think only board-map can serve direction for customers. It is a major problem with new comers who are easy to lose the way because they are not familiar with this area. They prefer to hold map brochures for guideline when they travel around the Chatuchak station and looking for some services such as bus stops, van stations, and recreation park so this factor got less score (3.28).

For amenities, the meeting point with modern design, good environment and good air circulation are quite high score by 3.83, 3.94, and 3.87. The meeting point is located in the middle at the second floor of the interchange. Shops, seats and facilities arrange in the suitable way, they do not make customers feel cramped. However, toilet and parking factors are low satisfaction with 3.22. Fewer customers know the location of toilets and it is located on the side which is less people used. Park and ride parking is also currently not enough because it should be shared with BTS passengers. During weekend, visitors of Chatuchak market also park there so clients are dissatisfied. The spaces are able for 1,500 automobiles, 100 motorcycles, and 120 bicycles[1]. Thus, parking is not enough for customers in weekday and especially on weekend and the customer satisfied score is only 3.15 which is the lowest satisfaction of all components.

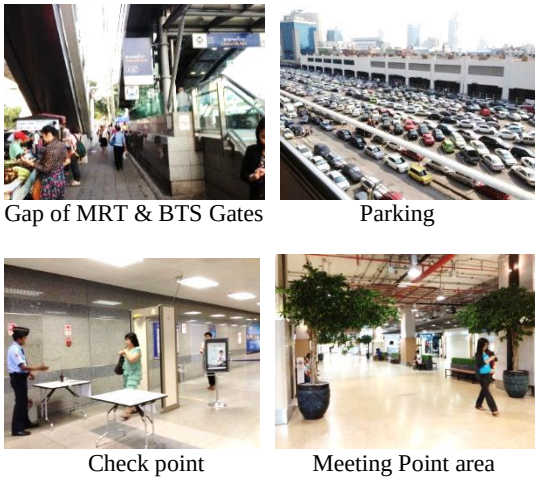
Gap of MRT & BTS Gates
Parking
Check point
Meeting Point area

Fig. 4 Chatuchak Interchange Facilities

The last characteristic is security, provision of CCTV is the highest score (3.75) of this characteristic. They satisfied the location that is suitable and can help them when they have an accident. On the contrary, check point is low score with 3.39. It provide for customer's security and station. Check point is iron scanner. People who go inside the MRT station are scanned. Its system

sometimes has a problem with mobile phone. Some people were scanned and it alarms, they do not carry any prohibited things so the customers do not believe this interchange is high security performance.

This study used interval scale for customer satisfaction level discussion with 5 tiers so interval scale is 0.80 from 1.00 to 5.00 points. The scores rank from very dissatisfied to very satisfied. (See Fig.5)

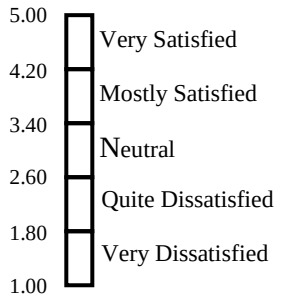

Fig. 5 Scale of customer satisfaction level

The Average score scale for analysis is compared with customer satisfaction level (Table 1). The result is all major aspects are mostly satisfied level. This result can demonstrated that passengers satisfied Chatuchak park interchange although the average score that is people feel neutral with 8 factors of whole aspects that are disability in access aspect, map brochure from information factor, four components of amenities that are various shops, seats, toilets and parking, and check points and emergency medical service in security issue. However, all details of connectivity characteristic are mostly satisfied.

ANOVA test was carried out to analyze the difference between group means of the following groups:

First, it was used to check whether the objectives between weekday and weekend customers are different or not. The result shows that there is no significant different.

Table 1 Customer satisfaction level analysis

Factors		Mean	Customer satisfaction level	Avg. score	Customer satisfaction level
Access	Mode	3.92	Mostly satisfied	3.74	Mostly satisfied
	Entrance	3.87	Mostly satisfied		
	Disable	3.39	Neutral		
	Parking distance	3.61	Mostly satisfied		
	Time service	3.90	Mostly satisfied		
Connection	Transfer	3.90	Mostly satisfied	3.71	Mostly satisfied
	Pedestrian	3.55	Mostly satisfied		
	Timetable	3.67	Mostly satisfied		
Information	Map brochures	3.28	Neutral	3.57	Mostly satisfied
	Clear map	3.49	Mostly satisfied		
	Entrance	3.81	Mostly satisfied		
	Directional sign	3.77	Mostly satisfied		
	Polite staff	3.54	Mostly satisfied		
	Staff	3.64	Mostly satisfied		
	Announcement	3.58	Mostly satisfied		
	Real time	3.48	Mostly satisfied		
Amenities	Modern	3.83	Mostly satisfied	3.52	Mostly satisfied
	Environment	3.94	Mostly satisfied		
	Air circulation	3.87	Mostly satisfied		
	Various shop	3.35	Neutral		
	Seat	3.21	Neutral		
	Buying ticket from staff	3.51	Mostly satisfied		
	Ticket machine	3.58	Mostly satisfied		
	Toilets	3.22	Neutral		
	Parking	3.15	Neutral		
Security	Personnel	3.58	Mostly satisfied	3.51	Mostly satisfied
	Check point	3.39	Neutral		
	Fire extinguisher	3.45	Mostly satisfied		
	CCTV	3.75	Mostly satisfied		
	Emergency medical	3.39	Neutral		

The analysis also found no significant different between all factors under accessibility and gender. The same result was also yielded for accessibility and age.

When factors of amenities were analyzed with age, it was found that age groups have significant different for the factors of various shops (sig. = 0.036) and toilet (sig. = 0.029). In term of variety of shops, the average score between customers who are younger 18 years old and 18-25 are different satisfaction significantly (Sig. = 0.028). Furthermore, adult group who are 26 – 40 years old are different from seniority that are

older than 60 significantly (sig. = 0.013). Another case of toilet is significant, especially for young people group. Their satisfaction is different from other groups significantly.

However, relationships between occupancy variable within each characteristics are not significant difference. They can explain that occupancy is not influence to satisfy with any kinds of components.

Turning to consider about income variable, the result describes that means of mode and entrance in access factor are different significantly which are 0.12 and 0.15 with 0.05 significant level while the others are no significant different. In order to determine the different satisfaction, the relationship of clients' income between lower than 15,000 baht and 50,001 – 100,000 baht are different both mode (Sig. 0.048) and entrance issues (Sig. = 0.006). Meanwhile, relationship between 15,000 – 50,000 baht income group and 50,001 – 100,000 baht group are different with significant 0.002 and these passengers who get 50,001 – 100,000 baht are different from higher income significantly (Sig. =0.003).

6. Conclusion

The study shows that, in general, respondents are satisfied with Chatuchak interchange for all five major characteristics: access, connection, information, amenities and security. Access aspect is the highest score that customers satisfied. Most users satisfied with the interchange regarding to accessibility of many available modes, environment around meeting point, and time service. On the other hand, some components that are disable route, map brochures distribution, variety of shops, seats in meeting point area, toilet location, parking spaces, checking point and emergency medical service from four aspects are satisfied in neutral level except connection.

After analysis by ANOVA, purpose of users in weekday and weekend are not significantly different. When considering age variable, no factors are different excluding various shops and toilet factors. In contrast, occupancy is not influence with satisfaction in any aspects. Besides, income variable is only significant different in access viewpoint with each other.

It should be noted that some facilities and services in Chatuchak interchange are not yet at the level to highly please passenger. However, this interchange still attracts people to use its services and facilities, which, hopefully, can be improved following the findings of this study.

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