THE TAIPEI MRT (MASS RAPID TRANSIT) TOURISM ATTRACTION ANALYSIS FROM THE INBOUND TOURISTS' PERSPECTIVES

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ABSTRACT. Of all cities in Taiwan, Taipei is fully internationalized and best-equipped with a completed metro public transit system. Taipei MRT Company is trying to increase the number of inbound tourists by providing a better travel experience and design different marketing strategies to increase better MRT tourism attraction. The study purposes are to investigate inbound tourists' considerations for choosing public means of transportation during their travel in Taipei City, conduct the tourism attraction analysis of Taipei MRT system from the perspectives of inbound tourists, and identify how inbound tourists' traveling behavior influence their perceptions of Taipei MRT tourism attractions. The study sampled 312 inbound tourists in August and September of 2006 by using a closed-ended questionnaire. Factor analysis revealed five factors that can be attractive to inbound tourists: holistic, service, information, tourism image, and location attraction. The study result also indicated that inbound tourists with different socio-economic characteristics, traveling behaviors, and different MRT experience have statistically different perceptions of Taipei MRT Tourism attractions.

INTRODUCTION

Of all cities in Taiwan, Taipei is fully internationalized and ranked as the best island sightseeing city according to the 2004 Annual Survey Report on Visitors Expenditure and Trends in Taiwan (Taiwan Tourism Bureau, 2005). In order to attract foreign tourists to visit Taiwan, Ministry of Transportation and Communications proposed a program—"Challenge 2008 National Development Plan" with a Doubling Tourist Arrivals Plan from 2002 to 2007. This plan will target the development of main and secondary visitor source markets, and make optimum use of the promotional capabilities of government offices overseas to vigorously enhance Taiwan's new tourism image and effectively attract international tourist visitors to Taiwan. Due to this, Taipei City is making many efforts to provide tourists a better

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traveling environment. For example, a Taipei Travel Net has been created to provide information on tourist attractions, destinations, transportation, and accommodation for inbound tourists (Taipei Travel Net, 2006). By doing this, Taipei's urban tourism could provide a better travel experience for inbound tourists, especially for youth travelers, who constitute a very important, distinct, and separate tourist segment, and are considered to have good future prospects (Kale, McIntyre, & Weir, 1987; Keeley, 1995, 2001; Kreul, 1991).

However like all other large urban cities, Taipei City also faces serious problems such as traffic congestion, automobile dependence, and automobile emissions, which decrease the quality of living and traveling. In order to solve those problems, many cities invest sizeable amounts in the extension and development of old and the creation of new public transport systems (Golias, 2002). Many researchers argued that rail-based systems can play a critical role in overcoming the problems caused by the automobiles (Ahern, 2001; Newman, 1995; Thornblom & Bengtsson, 1997; Vuchie, 1991). Much of the development of new systems has concentrated on the construction of metros or subways, which can offer an attractive alternative to the automobile (Golias). Monzon (2000) found that travel demand impacts of a new privately operated subway system in Madrid can have certain impacts on travel demand. Monzon indicated that 75% of the travelers had been transferred from other modes of transportation such as bus (65%) and private automobile (35%). Golias evaluated the impact of the construction of a new subway system on travel behavior and mode choice. He found that the new Athens Metro system has attracted many bus riders and a smaller number of private car users. The public transport system can play an important role in solving the problems posed by the private automobile (Ahern; Newman; Thornblom & Bengtsson; Vuchie) in terms of providing a better living and traveling environment. Like other cities, Taipei started to operate its

metro public transit system in 1997 and is best-equipped with a completed metro public transit system. By 2007, Taipei's metro transit system had seven routes with 69 stations.

Page (1998) stated that the transport system is a fundamental factor in enabling human activity, which takes place in a recreational and tourism context. However, the relationship among transport, recreation, and tourism has mostly been studied by geographers who have used concepts developed by spatial scientists to understand the interactions and locational aspects of transport systems as they impact and depend upon recreation and tourism activities (Page). A well-designed transportation system is useful for local commuters and the tourism industry and can increase tourists' levels of satisfactions toward the destination as well. A study conducted in Spain evaluated five passenger transport service providers (urban buses, metropolitan area buses, local trains, metro underground trains and trams, taxi) in a tourism-receiving metropolitan statistical area. The results indicated that public transport is making great efforts to adapt to user preferences and not all the brands are equally interested in differentiation, despite the general level of satisfaction with public transport (Gimeno & Vita, 2006).

Since 1997, Taipei MRT solved its chronic traffic problem by improving the flow of traffic, revitalizing the city and promoting the re-development of inner city and satellite towns. Taipei's Metro system has eight routes: Muzha Line, Danshui Line, Zhonghe Line, Xindian Line, Banqiao Line, Nangang Line, Tucheng Line, and Xiaonanmen Line. In addition to serving the local students and commuters, Taipei's MRT system serves recreation and tourism purposes by opening new stations in tourist destination, and by offering travel passes for a day or more. With those marketing strategies, Taipei MRT system hopes to increase the number of international tourists rather than local commuters. Due to this, the study purposes are to investigate inbound

tourists' considerations for choosing public means of transportation during their travel in Taipei City, conduct the tourism attraction analysis of Taipei MRT system from the perspectives of inbound tourists, and identify how inbound tourists' traveling behavior influence their perceptions of Taipei MRT tourism attractions. With this study result, inbound tourists could make the best use of the city's transportation options and travel around Greater Taipei conveniently and affordably.

LITERATURE REVIEW

Tourism Attraction

Urban tourism emerged as a significant and distinct field of study during the 1990s. Earlier work, dating back to the 1960s, was sporadic and limited, and much of it was done by geographers (Pearce, 1979, 1995). Then attention turned to the identification of urban tourism as a distinctive field in terms of four commonly accepted qualities of cities: high physical densities of structures, people, and transportation function, and economic scale. A city may have multiple and overlapping roles as a tourism gateway, staging spot, destination, and source (Pearce, 1995). According to Karski (1990), the attractiveness of urban destination depends on the variety of things to see and to do in a reasonably compact, interesting, and attractive environment.

Attraction has been viewed as central to tourism and as the main reason that tourists visit a particular destination, and engage in particular activities. Attraction is a psychological phenomenon. It is the force by which one object draws closer to another. The object arouses interest or draws attention. To incorporate the concept of attraction into tourism, it could be seen as the way in which a tourism destination becomes attractive to tourists. Tourism attraction was originally defined as "all those elements of a 'non-home' place that draw discretionary travelers away from their homes" (Lew, 1987). Gunn

(1988) has argued that attractions have had a "pulling power" since classical times. This magnetism appeals not only to the interests and preferences of the visitor or tourist, but also reflects the quality of design, the development, and the operation of the attraction. MacCannell (1976) defined an attraction as "an empirical relationship between *a tourist, a sight, and a maker*—a piece of information about a sight."

Later, Leiper (1990) reformulated MacCannell's definition in more systemic terms and replaced the "sight" by Gunn (1988) of a "nucleus." He stated that "a tourist attraction is a system comprising three elements: a tourist or human element, a nucleus or central element, and a marker or information elements. A tourist attraction exists when the three elements are connected with each other." A primary nucleus is a place attribute including its location, sight, or cultural element, which can influence tourists' decision to visit. Tourists can be convinced to visit a destination that matches their needs and wants by receiving information from a generating market such as well designed and attraction-specific brochures from tourism destination (Getz, 1994). In other words, tourists are "pushed" by their own interest in the destination.

Attraction is very important for a tourism destination. The tourism destination attraction is made of several components including local scenery, natural resources, tourism activities, entertainment, and service (Lew, 1987; Gunn, 1988, Gao, 1995, Huang, 2001). Gunn (1994) indicated that destination tourism attraction could be different from tourist to tourist based on how long they visit the destination. The concepts of tourism attraction are normally used in a place or destination. However, it can also be used in different areas. Inskeep (1991) further mentioned tourism attraction could be divided to three types: (a) nature attraction, composed of natural resources and environments; (b) culture attraction, composed of human-made activities and entertainments; and (c) unique attraction. Swarbrooke (1996) also proposed four types of tourism attractions

including nature scenery, festival and event, man-made building or facility, and recreation activities or entertainment. Inskeep divided the tourism attraction into five types: nature, culture, special event, tourism-supported facility and service and others. A great deal of attention has been lavished on the destination, event, and activity attraction. The focus of this study—Taipei MRT tourism attraction—is considered as the "man-made building or facility" category proposed by Swarbrooke.

A tourism attraction should have three components: a decision-making model for the tourism destination, the experience of traveling to that destination, and the expectation of that destination (Mayo, 1975; Mayo & Jarvis, 1981). Gunn (1988) stated that the attractions have exercised a magnetic "pulling power" over people since classical times and will also be determined by the difference between pre-trip expectation and post-trip experience (Gunn, 1994). Leiper (1990) stated that tourists are motivated to visit a destination by information they received and are "pushed" by their own motivation to a place where they expect their needs and wants to be satisfied. Smith (1996) stated the "push" factors are tourists' traveling motivation and socio-economic characteristics; and the "pull" factors are the resources provided at the destination, the information they received, and their expectations. Liu (1998) found that tourism attraction is influenced not only by demand but also by supply. The factors from the demand side have inner factors, socio-economic characteristics, and outer factors. The inner factors are tourists' perceptions of the tourism destination, recreational benefits for tourists, reasons for traveling, attitude, and personality (Wang, 1994; Wu, 1996). The socio-economic variables are tourists' age, gender, educational level, average traveling expenses, and leisure time (Lin, 1984). Outer factors include family status, marital status, opinions from tour group members, culture, income, education level, and career (Tsai, 1990). Even the tourists' traveling behavior could also have a relationship with tourism attraction of the destination where they visited. Those behaviors included the type of trip they were on, the number of people in their travel party, when they made their decision to visit, the total number of trips they had taken in the last 12 months (Kerstetter, 1998), and the information sources (Andereck, 1994)

Several factors influence tourism attraction from the supply side: landscape, environmental conditions, traffic, accessibility, and location (Lin, 1984; Liu, 1998, Smith, 1996). Fodness (1990) found that tourism product and marketing strategy can influence tourists' perceptions toward tourism attraction. Hu and Ritchie (1993) surveyed tourists with two different traveling motivations and identified the difference in their perceptions toward tourism attraction between tourists with different traveling motivations. The result indicated that tourists' perceptions could be influenced by destination location, the services available at the destination, and tourists' expectations (Hu & Ritchie, 1993). Pyo et al. (1989) also claimed that a significant relationship was found between tourism attraction and tourists' motivation.

Tourism and Transportation

Page (1998) stated that the transport system is a fundamental factor in enabling human activity in a recreational and tourism context. Laws (1995) identified transport as one of the secondary features which contribute to the attractiveness of a destination. Many studies have made the point that transport is repeatedly identified as a key element of the overall tourism product at a destination (Gunn, 1988; Jansen-Verbeke, 1986; Middleton, 1998; Page, 2004). For urban tourism, the role of the transport networks might be considered critical (Evans & Shaw, 2002). Law (2002) claimed that an urban public transport system might not be ideal for visitor use in terms of their frequency and route coverage because tourism planners seldom have a significant influence on public transport planning.

Orbasli and Shaw (2004) indicated that public transport development concentrates on the needs of local people, not the needs of visitors; however, they concede that the transportation requirements of visitors to the city required future attention—especially for the travelers who might have difficulty in walking (Takeda & Card, 2002). The accessibility of a destination clearly influenced its attractiveness and visitor potential. The tourists' need to travel was seen as a necessary side-effect of the attraction, but one that was by and large left to the discretion of transport providers. The transport industry, in turn, sought to satisfy the need for (physical) mobility in the most efficient way.

Meyer and Miller (1984) observed that the majority of people will take the shortest or most-efficient route from their point of origin to their destination. For a large population, the distribution of these trips will reflect perfect knowledge of the available route alternatives, and will include responses to congestion and the availability of public transport (Lew & McKercher, 2006). Four elements can influence urban transportation choices: trip origin, trip destination, transportation network, and transport mode. Compared to local people, tourists—especially international tourists—are typically unfamiliar with the public transit systems in destinations they visit. Of all public transit travel modes, public ferries, street cars, and subways are considered physically and psychologically easier for tourists to use than bus. Rurco, Stumbo, and Garnarcz (1998) indicated that difficult public transport is a barrier to tourism participation; and also Page (1994) observed that only "adventurous tourists wish to travel on local public transport systems." Oppermann (1995) also found that a traveler with a different age and life cycle can have different choices toward destination and transportation tools.

Gronau and Kagermeier (2007) surveyed Germans on their modes of transport during their leisure time and then identified key factors for the provision of successful leisure and tourism public transport. Those included the identification of the target groups at a given leisure facility and the quality of public transport within the entire catchment area of the facility, which should ensure that customers arrive at the starting point in a convenient way. The third factor is the competition. On the part of inbound tourists, the competitors of the Taipei MRT system are taxis, buses, coaches, and other modes of public or private transport. The other two factors are quality of the offer and intensive, creative, and continuous market communication after establishing a new service. This study describes the key factors for successful tourism public transport from the perspective of domestic tourists. However, this study and the findings have not been sufficiently considered from the inbound tourists' perspectives.

Lots of studies had focused on modeling transport choice behavior by using objective measures of attribute data: price, time, etc. Winzar (1993) also conducted a study regarding traveler's choice behavior toward a transport tool for their pleasure trips and concluded that their choice is more likely to be a function of brand perceptions or brand image, which in turn is a function of past experience, expectations, promotional influences, family life stage, and other personal factor by using the date of inbound tourists. Another study conducted by Thompson and Schofield (2007) identified the salient dimension of public transport performance from the perspective of overseas visitors and found three factors: "*Ease of use*," "*Efficiency and safety*," and "*Good parking*." The "Ease of use" factor is closely linked with the dimension of simplicity (Friman, Edvardsson, & Garling, 1998). The factor "*Efficiency and safety*" represents the time and safety dimensions of public transport performance. Later on three dimensions are found to be the small but significant role of public transport performance as a predictor of satisfaction with the destination. Of all types of public transport, the author suggested that Manchester's rail and Metrolink system should be the focus of any efforts to

tailor Manchester's public transport to overseas visitors' use.

According to the above studies, it is quite evident that the quality of the transport system is very important to the tourism development—especially for urban tourism. In the past, the majority of studies of urban public transport performance from the user perspective has focused on local users, not on visitors from overseas. Few studies have explored the understanding of inbound tourists' attitudes to and perceptions of the public transport system. The aim of this article is to identify inbound tourists' concerns about the public transport system in Taipei City and to identify the salient dimensions of Taipei Metro system's attractions from the perspective of inbound tourists.

RESEARCH METHODOLOGY

Study Hypothesis

The study's purpose is to measure how inbound tourists perceive the attraction of MRT tourism in Taiwan. According to research objectives and literature reviews, the hypotheses are (a) Hypothesis 1: Inbound tourists with different socio-economic characteristics have statistically different perceptions of Taipei MRT tourism attractions; (b) Hypothesis 2: Inbound tourists with different traveling behaviors have statistically different perceptions of Taipei MRT tourism attractions; and (c) Hypothesis 3: Inbound tourists with different MRT experiences have statistically different perceptions of Taipei MRT tourism attractions.

Study Population

The study population was inbound tourists who visited Taiwan for less than 6 months for recreation, business, VFR (visiting friends and relatives) purposes and had experience of using the Taipei MRT system. Because of the language diversity of inbound tourists, the questionnaire was translated into Chinese, English, and Japanese. The survey was distributed in Taipei MRT stations which are closer to popular tourism destinations including Chiang Kai-Shek Station (37.8%), Danshui (23.1%), National Palace Museum (18.6%), Longshan Temple (10.3%), Taipei 101 Building (4.8%), Jiantan (2.6%), Shilin (1.9%), and YongKang Station (1.0%) in August and September of 2006. In the end, the study sampled 312 inbound tourists. Of those respondents, 192 study participants completed the survey in English, 99 used Japanese, and 21 used Chinese.

Study Instrument

This study used a closed-ended questionnaire as the survey instrument with three sections. The first part asks about respondents' previous traveling experience, including traveling pattern (independent, half-independent, or group package tour), previous experience of using mass transportation while traveling abroad, the average number of annual trips abroad, the information sources for Taipei MRT, the number of people on their trips, the reason for using Taipei MRT, and frequency of taking Taipei MRT. The third part of the questionnaire elicits the respondents' socio-economic characteristics such as gender, age, education, career, annual income, and nationality. Those questions are designed as nominal or ordinal scale.

The second part of the questionnaire asks about Taipei MRT tourism attractions which fall into nine categories: Taipei MRT transfer/connection system, multi-language environment, service people who work in Taipei MRT stations, ticket price, shopping function/environment nearby, landscape design, information source and system, and pedestrianization system around Taipei MRT stations. Based on these nine categories, 23 tourism attractions about Taipei MRT system were developed by using a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The respondents were asked to rank those statements to express their perceptions of Taipei MRT's tourism

attraction. The data were analyzed by using the Statistical Package for Social Sciences (SPSS) software. The data were then used for descriptive analysis, factor analysis, and inferential statistic analysis including paired sampled *t* test and One-Way ANOVA to detect whether tourists of various demographic backgrounds and traveling behaviors had different perceptions of Taipei MRT tourism attractions.

RESEARCH RESULT

Analysis of Socio-Economic Characteristics

Taiwan Tourism Bureau found that males accounted for 60% of all inbound tourists to Taiwan in the past 5 years and females accounted for about 40%. For this study, male and female respondents were almost equally represented. The majority of study respondents (66%) are younger than 30-years-old, which is the same percentage indicated in the Tourism Annual Report and other studies. Almost 60% of respondents are single. Thirty-five percent of respondents were students under the age of 30; 65% were working in the business, service, and public sectors. Among the respondents who are younger than 30 years and single, 40% earned a monthly income of less than $1,500. Another 33% of respondents had a monthly income between $1500 and $3000. The educational level for most study respondents is university or college graduate (76%) and another 16% had a graduate degree. The result is quite similar to the result conducted by Tourism Bureau. Forty-seven percent of the respondents were from Asia, 29% were from Europe, and 16% were from United States and Canada. Still another 8% of participants are from other counties in the Pacific Ocean, Australia, New Zealand, or South Africa.

Inbound Tourists Traveling Behavior

Eighty-two percent of study respondents came to Taiwan as independent travelers and arranged for their own accommodation, transportation, food and beverage, and entertainment. Thirty-five percent of study respondents had already taken the MRT when traveling abroad and had also considered buses or taxis. Another 10% had experience about taking motor coaches and rental cars while traveling abroad. However, trains, ferries, rental scooters, and monorail were not popular means of transportation for international travelers. For travel in Taipei, MRT is still the most important means of transportation for about 65% of respondents. The bus and taxi are considered as a second and third choice for transportation while traveling in Taipei. Rental car is a very important means of transportation for inbound tourists in the United States and Canada but only 1% of inbound tourists had experience with using a rental car in Taipei. About 30% of study respondents collected information about Taipei MRT stations from travel guides, 20% from relatives and friends, 16% from brochures, and 11% went online. More than 30% of respondents traveled to Taipei with two friends or relatives, but almost 20% traveled alone. Almost half of the respondents (48%) took the Taipei MRT to reach tourism spots and destinations, some to go shopping, and another 19% were for transferring to take a bus to other destinations. Forty-two percent of the respondents used the Taipei MRT an average of 4 to 10 times while staying in Taipei. Almost 80% of study respondents had fewer than 10 experiences on the Taipei MRT.

The Analysis of Taipei MRT Tourism Attraction

Based on the analysis of respondents' agreement with Taipei MRT tourism attraction, study respondents showed very strong and positive perceptions of Taipei MRT tourism attractions according to mean and skewness analysis. Most study respondents agreed that "Taipei MRT is safe and reliable" with a mean as high as 4.5 (The highest level of agreement is "5" and the

lowest is "1."). The statements including "Taipei MRT has a short waiting time," "Taipei MRT is efficient," and "Taipei MRT is on-time" also have mean values between 4 and 4.5. Compared to those items, study respondents disagreed with statements like "Handicapped facility is sufficient," "Close to the hotel," "Interior design is unique," "Good landscape design," "Distinct landmark," "Multi-language interpretation and instruction," and "Information is abundant and easy to acquire" (Table 1).

With the exception of the Taipei MRT, there are many means of transportation for inbound tourists to use, such as buses or taxis. Unlike local residents, inbound tourists face certain barriers to using local means of transportation due to language differences. Nearly 61% of participants mentioned the transfer system and ticket price as reasons for choosing their means of transportation. Regarding the performance of Taipei's MRT, only 17% of respondents thought that it did not require any improvement; the majority cited many things about it that needed improvement. Still, 18% of study participants complained about Taipei MRT's transfer system but only 6% of participants complained about Taipei MRT's ticket prices, finding them quite reasonable and acceptable (Table 2).

Almost 23% of study respondents agreed on the need to improve Taipei MRT's information sources, including the quality of Taipei MRT employees, the variety of information about Taipei City tours, and the Taipei MRT system. As many as 22% cited the need for a more bilingual environment. The greatest challenge for an independent international traveler is the language barrier. However, the inbound tourists in Taiwan came from countries that speak many different languages. In order to make independent travelers comfortable, Taipei MRT should provide more interpretation services.

TABLE 1. MRT Attractiveness From the Perspective of Inbound Tourists

Attraction Statement	N	Mean*	SD	Skewness	Kurtosis
1. Close to the hotel	310	3.85	.973	−.469	−.315
2. Efficient	311	4.44	.724	−1.201	1.051
3. Short waiting time	311	4.46	.655	−.946	.387
4. On-time	310	4.43	.741	−1.110	.813
5. Safe and reliable	312	4.51	.690	−1.413	2.272
6. Comfortable	312	4.30	.822	−1.036	.591
7. Ticket price is reasonable	311	4.46	.802	−1.447	1.559
8. Process is easy to understand	311	4.33	.832	−1.218	1.292
9. Convenient transfer system	311	4.12	.850	−.731	.213
10. Information is abundant	310	3.83	.903	−.266	−.670
11. Signpost is very clear	312	4.06	.827	−.532	−.222
12. Multi-language interpretation	309	4.00	.975	−.775	.007
13. Sufficient handicapped facility	291	3.51	.888	.004	.093
14. Environment is clean and neat	312	4.37	.796	−1.116	.742
15. Interior design is unique	310	3.65	.932	−.146	−.740
16. Good landscape design	311	3.63	.906	−.039	−.583
17. Distinct landmark	311	3.61	.891	−.025	−.511
18. Convenient to sightseeing spot	312	4.18	.765	−.707	.406
19. Attached to tourism spots	310	4.16	.818	−.812	.387
20. Comfortable pedestrianization	311	3.75	.839	−.158	−.449
21. Diversified functions of land use	308	3.79	.868	−.059	−.895
22. Convenient for shopping	308	4.15	.749	−.433	−.532
23. Friendly service people	306	3.93	.888	−.283	−.763
Overall	**312**	**4.26**	**.672**	**−.815**	**1.642**

Note. *1 = strongly disagree with the statement to 5 = strongly agree with the statement.

TABLE 2. The Importance and Performance Analysis for MRT*

	Consideration for Transportation		Improvement for MRT	
	Frequency	Percentage	Frequency	Percentage
Transfer system	198	64%	56	18%
Bilingual environment	113	36%	70	22%
Service people	40	13%	21	7%
Ticket price	189	61%	19	6%
Shopping environment	98	31%	23	7%
Landscape design	14	5%	40	13%
Information source	107	34%	73	23%
Pedestrianization system	41	13%	50	16%
Other	10	3%	34	11%

Note. *These two questions are multiple choice questions.

A bilingual English and Chinese environment would be the basic requirement for international visitors. Two additional suggestions for improvement are the pedestrianization system and landscape design. A minority of people suggested that MRT offer more escalators and amenities, better maps for interpretation, cleaner restrooms, a 1-day ticket, and more access to different destinations.

Factor Analysis for MRT Tourism Attractions

This study employed exploratory factor analysis (EFA) to derive meaningful and uncorrelated factors that could be used in the subsequent analysis. Thus, factor analysis was primarily used as a data reduction technique. According to the tests of KMO value (.892), Bartlett's chi-square value (2964.75), and p value (less than .05), the items were factor analyzed using principal component analysis along with a varimax factor rotation. The data loaded on five factors based on the criterion of eigenvalues greater than 1. Most of the factor loadings were greater than .50, which indicated a good correlation between the individual items and the five factors. The 23 items were factor analyzed again and produced five factors. All Cronbach alpha coefficients of the factors scored higher than .70, and the cumulative percentage explained for the five factors is 61.92% (Table 3).

For factor 1, the factor loading is 3.571 and the percentage of variance explained is 15.32%. Seven attraction statements are included: efficient, short waiting line, on-time, safe and reliable, comfortable, reasonable ticket, and clean environment. The factor 1 is named as "Holistic Attraction." For factor 2, the factor loading is 3.146 and the percentage of variance explained is 13.68%. Six attraction statements are included: multi-language interpretation, sufficient handicapped facility, comfortable pedestrianization design, diversified functions of land use, convenient for shopping, and friendly service people. The factor 2 is named as "Service Attraction."

For factor 3, the factor loading is 2.713 and the percentage of variance explained is 11.80%. Four attractions in this factor are: process is easy to understand, convenient transfer system, information is abundant, and signpost is very clear. The factor 3 is named as "Information Attraction." For factor 4, the factor loading is 2.709 and the percentage of variance explained is 10.780%. Three attraction statements in this factor are: unique interior design, good landscape design, and distinctive landmarks. This factor 4 is named as "Image Attraction." For factor 5, the factor loading is 2.102 and the percentage of variance explained is 9.104%. This factor had statements including close to hotel, convenient to sightseeing spot, and attached to tourism spots. The factor 5 is named "Location Attraction."

TABLE 3. The Factor Analysis for MRT Attractions

	Holistic Attraction	Service Attraction	Information Attraction	Tourism Image	Station Location
Efficient	.669				
Short waiting time	.749				
On-time	.713				
Safe and reliable	.743				
Comfortable	.657				
Ticket price is reasonable	.498				
Environment is clean and neat	.507				
Multi-language interpretation		.487			
Sufficient handicapped facility		.631			
Comfortable pedestrianization		.635			
Diversified functions of land use		.635			
Convenient for shopping		.457			
Friendly service people		.697			
Process is easy to understand			.722		
Convenient transfer system			.713		
Information is abundant			.671		
Signpost is very clear			.721		
Interior design is unique				.714	
Good landscape design				.770	
Distinctive landmark				.587	
Close to the hotel					.737
Convenient to sightseeing spot					.650
Attached to tourism spots					.655
Factor Loading	3.571	3.146	2.713	2.709	2.102
% variance explained	15.32	13.68	11.80	11.78	9.14
Cumulative % of variance	15.32	29.20	41.00	52.78	61.92

MRT Tourism Attraction by Socio-Economic Characteristics

The one-way ANOVA indicated that inbound tourists of different ages have statistical differences in their perceptions of Taipei MRT tourism attraction factors including holistic, information, and image attractions. According to the post-hoc test, older inbound tourists had better perceptions of Taipei MRT tourism attractions than younger visitors did. A statistically significant difference also exists in MRT's holistic and information attraction between married and single respondents. Married international visitors agreed with MRT tourism attraction more than unmarried international visitors did. The analysis also indicated that inbound student tourists have better perceptions of MRT's information attraction than did non-student tourists

(Table 4). Inbound tourists of different nationalities showed statistical differences in holistic, service, information, image, and location attractions of Taipei MRT. According to the post-hoc test, inbound tourists from Asia had were not as attracted to Taipei MRT as were inbound tourists from other areas.

MRT Tourism Attraction by Respondents' Previous Experience

Table 5 illustrates the differences in MRT tourism attraction factors according to inbound tourists' traveling type (group or independent). The group traveling type referred to inbound tourists who joined a group tour to Taiwan or buy a package holiday or package tour which consists of transport and accommodation advertised and sold together by a vendor known as a

TABLE 4. The Difference in MRT Tourism Attraction by Socio-Economic Characteristics

Attraction Factor	Socio-Economic	*t*/*F* Value	Comparison
Holistic attraction	Age	5.798	Above 41 > Under 30 Above 41 > 31- to 40-years-old
	Marriage status	2.206	Married > Not married
	Nationality	16.018	America > Asia, Europe > Asia
Service attraction	Student status	2.253	Student > Not student
	Nationality	18.150	America > Asia, Europe > Asia
Information attraction	Age	3.573	Above 41 > Under 30
	Married status	3.201	Married > Not married
	Nationality	3.275	America > Asia
Image attraction	Age	3.102	
	Nationality	4.921	America > Asia
Location	Nationality	3.439	America > Others

TABLE 5. Differences in MRT Tourism Attractions by Trip Type

Attraction Factor	Trip Type	*N*	Mean	*SD*	*t* Value	Sig.
Holistic attraction	Group tour	57	4.24	.463	−2.990	.003
	Independent tour	249	4.47	.558		
Service attraction	Group tour	54	3.54	.600	−4.298	.000
	Independent tour	57	3.94	.618		
Image attraction	Group tour	56	3.41	.716	−2.361	.019
	Independent tour	252	3.69	.802		

tour operator. Other services may be provided like a rental car, activities, or outings during the holiday. In this study, Group tour also included half-independent travelers. The result found that international visitors of different traveling types can have statistically significant differences toward holistic, service, and information attractions of Taipei MRT. Independent travelers expressed higher agreements than group travelers. Independent travelers usually spent more time gathering travel information and had more opportunities to receive help from local residents or service people (Table 4).

According to data analysis, inbound tourists with different reasons for taking Taipei MRT have statistically significant differences in their agreements with Taipei MRT tourism attraction factors. Inbound tourists who took MRT to a tourism destination were more agreeable about MRT location attraction. Those respondents considered location of MRT an important factor in its attraction and increased their willingness to use MRT. For respondents who take MRT for experience, service quality is a very important attraction factor. Those respondents considered taking MRT as a tourism activity and paid more attention to the service they received from MRT. Inbound tourists who took MRT for transferring purposes were more agreeable about MRT holistic and service attraction (Table 6).

The one-way ANOVA indicated that inbound tourists with more experience of taking Taipei MRT expressed statistical differences in their agreements toward Taipei MRT tourism attraction factors including holistic, service, information, image, and location. According to the post-hoc test, inbound tourists who took Taipei MRT more than 10 times showed a strong and positive agreement toward Taipei MRT tourism attractions compared to inbound tourists who took Taipei MRT less than three times (Table 7).

The one-way ANOVA was also used to test the difference in inbound tourists'

TABLE 6. The Difference on MRT Attractions by Different Purposes

Factor	Purposes of Taking MRT	N	Mean	t Value	Sig.
Location attraction	For commuting	267	4.11	3.393	.001
	Not for commuting	41	3.74		
Service attraction	For MRT experience	51	4.04	2.216	.027
	Not for MRT experience	238	3.83		
Holistic attraction	For transfer purpose	102	4.56	3.029	.003
	Not for transfer purpose	205	4.36		
Service attraction	For transfer purpose	96	4.03	3.156	.002
	Not for transfer purpose	193	3.78		

TABLE 7. The Difference in MRT Attraction by Number of Times of Taking Taipei MRT

Attraction Factor	F Value	Sig.	Comparison
Holistic	16.988	.000	Middle > Low, High > Low
Service	12.212	.000	Middle > Low, High > Low
Information	8.403	.000	Middle > Low, High > Low
Image	4.366	.014	Middle > Low
Location	4.549	.011	Middle > Low

Note. * 1 to 3 times (Low), 4 to 10 times (Middle), above 11 times (High).

TABLE 8. Difference in MRT Attractions by Satisfaction with Taipei MRT

Attraction Factor	F Value	Sig.	Comparison
Holistic	58.442	.000	b > a, c > a, c > b
Service	29.841	.000	b > a, c > a, c > b
Information	41.472	.000	b > a, c > a, c > b
Image	20.533	.000	b > a, c > a, c > b
Location	25.925	.000	b > a, c > a, c > b

Note. * Very dissatisfied and dissatisfied (a), satisfied (b), Very satisfied (c).

satisfaction with Taipei MRT. The post-taking experiences had four groups: "Very satisfied with MRT," "Satisfied with MRT," and "Dissatisfied" and "Very dissatisfied with MRT." The result indicated that inbound tourists who were more satisfied with Taipei MRT expressed statistically positive agreements with Taipei MRT tourism attraction factors including holistic, service, information, image, and location. According to the post-hoc test, the more satisfied inbound tourists were, the higher their agreements with Taipei MRT (Table 8).

CONCLUSION AND DISCUSSION

The main purpose of the study is to investigate inbound tourists' socio-economic characteristics, their reasons for choosing public transportation, their opinions about Taipei MRT tourism attraction, and their suggestions to improve the Taipei MRT system. The study result found that the majority of inbound tourists who took Taipei MRT in Taipei are younger than 30-years-old, single, have a college degree, and come from the Asia-Pacific region. Respondents who visited Taiwan are independent travelers who usually traveled with one friend and have been abroad more than four times. The most important means of transportation they used on past trips abroad were MRT, bus, and cab. During their stay in Taipei, Taipei MRT was the main means of transportation. This result is different from the results reported by Thompson and Schofield (2007). They surveyed 280 overseas leisure visitors to Manchester and asked them about the modes of transport they had used during their stay in Greater Manchester. More respondents had used the bus than any other form of transport (29%), and all of the modes of public transport (bus, train, and metro) had been used by more respondents than private modes (car and coach). The figures from this study and Thompson and

Schofield's study both confirmed the importance of public transport for inbound tourists traveling in urban areas.

For independent travelers, the most important considerations for mass transportation are transfer system and ticket price. The result is reasonable according to the main characteristic of independent travelers such as budget tourists in accommodation and transportation spending and longer stay in a city for wide and in-depth visitation while traveling abroad. Through study result, the Taipei MRT price is quite acceptable and reasonable from the perspectives of inbound tourists. The Taipei MRT company provides different ticket packages such as Easy Card, Single-journey trip, 1-day pass, group ticket, and commemorative Ticket. EasyCard provides a 1-day pass ticket valid for unlimited Taipei Metro rides from first use until the end of service on a single day. It is valid for one passenger each time. The Easy Card is quite convenient for tourists. Other studies (Keeley, 2001) have indicated that independent travelers always travel countrywide and more than just a single city. For this reason, Taipei MRT should consider offering price incentives by cooperating with other citywide mass transportation systems such as buses, railways, speed railways, and the Kaohsiung MRT system.

The language barrier could discourage independent travelers and cause much inconvenience if the destination does not provide a friendly and multiple language environment for inbound tourists. Lew and McKercher (2006) suggested that some considerations should be emphasized for international tourists who are planning to use public transport system—including cost, the honesty of drivers, and language barriers. It is very important to understand the barriers and difficulties facing international tourists. For now, the Taipei MRT website and station only provide two languages for users: Chinese and English. Unfortunately, not all inbound tourists could understand Chinese or English. For most independent travelers, gathering information or making reservations from the website for their accommodation, transportation, or entertainment needs are very convenient and was considered as the main source for travel information. Taipei MRT should provide brochures, website, signpost, direction, and interpretation in more than two languages. The information on the Taipei MRT system should also be accessible not only in MRT stations but also in airports, railway stations, bus stations, travel information centers, tourist spots, hotels, and entertainment centers. In addition, the foreign language proficiency of service people in MRT stations should be improved.

Factor analysis revealed five factors that can be attractive to inbound tourists: holistic, service, information, tourism image, and location attraction. The "holistic" factor is quite the same as the "efficiency and safety" dimension found by Thompson and Schofield (2007), and identical to the dimension of simplicity found by Friman et al. (1998). This confirms that international tourists prefer to take Taipei's MRT system, which is on time, efficient, and away from heavy traffic. In The majority of respondents use Taipei MRT because of its holistic and service character. Inbound tourists from America thought that the Taipei MRT attraction should emphasize information, tourism image, and location. From the attraction factor analysis, respondents found that Taipei MRT possesses two distinct characters: holistic and service. Respondents agreed that Taipei MRT is efficient, safe, comfortable, and convenient for shopping.

Taipei's MRT system could be more attractive to inbound tourists with better information, tourism image, and location characters. In some major cities, MRT is compared to the New York City Subway and the Paris Métro. In Taipei, few stations such as Danshui, Xinbeitou, Xiaobitan, and Taipei Zoo are well designed. Most of Taipei's MRT stations still lack the interior, exterior, and landscape design which can impress inbound tourists and make the stations into distinctive landmarks or tourism spots. Taipei MRT's tourism image is a

very important factor in attracting potential users. An organic tourism image is formed by potential tourists' exposure to newspaper and television reports, magazine articles, and other non-tourism specific information sources. Afterwards, this organic image becomes an induced image, influenced by tourism-related information provided by public or private professional tourism agencies or organizations. If inbound tourists have a better tourism image of Taipei's MRT system, they will be more likely to take advantage of it.

Since the Muzha line opened in March 1996, the Taipei MRT system has grown to a total of seven routes and provided the fastest, most convenient, and most comfortable service. The majority of inbound tourists who took MRT in Taipei expressed high satisfaction with it. In order to realize sustainable development and satisfy inbound tourists' needs, the Taipei MRT system should enhance its attraction on information accessibility/sources and develop a distinct tourism image. The same idea was also proposed by Lew and McKercher (2006), who suggested that specialized tourism transport providers offer an alternative to public means and could include shuttle buses, hop-on-hop-off tour buses, limousines, tourist ferries, monorails, and the like. Lew and McKercher also noted the importance of understanding the international tourists' reasons for using the public transit system, which can also allow for the more efficient planning of services to meet the needs of tourists and the marketing of attractions and destinations.

According to the study results, some suggestions are proposed for future studies in terms of transportation planning and Taipei MRT product and image development. Many factors can influence the choice of a public transit system. Many authors indicated that first-time and repeat tourists show different destination preferences. The former prefer to explore a destination and discover a city's culture and heritage; the latter prefer social activities such as shopping and dinning (Fakeye & Crompton, 1991;

Gitelson & Crompton, 1984; Lau & McKercher, 2004). Gronau and Kagermeier (2007) arrived at a similar conclusion and stated that one of the success factors for leisure and tourism transport is the identification of the target groups at a given destination. Obviously, the purpose of attracting more international travelers to choose Taipei MRT as the main traveling mode cannot be achieved without the identification of the target user and the customized services for different types of users. If each type of transport tool or carrier want to attract and keep their customers, it is quite important to continually assess the characteristics of the segments (in terms of travelers) they are seeking to attract and adapt their distribution and also their pricing strategies (Pearce & Sahli, 2007).

To offer a better traveling experience in Taipei, it is necessary for Taipei MRT to cooperate with other modes of transport. Within the transport sector it is usually associated with linking different means of travel to one another. Travelers should experience their journey as a "chain of services," although different means and providers may be involved (Schiefelbusch, Jain, Schafer, & Müller, 2007, p. 95). The study conducted by Pearce and Sahli (2007) suggested that multiple channels for surface transport system can be used to reach a range of different types of customers (such as package tour traveler or independent travelers) with different characteristics and needs more effectively. The need for the tourist industry to integrate the full spectrum of tourist services in order to maximize the user's benefits and the provider's efficiency can be denied. Public transport, coaches, private car, and other modes are all equally valuable for tourists (Bethge et al., 2004). Tourists will make choices according to the situation. It is quite important to consider the whole journey from the tourists' perspective, thus including transfer system from their departure to their final destination.

This research provided much new information, filled a gap in the literature, and offered a comprehensive profile of Taipei

MRT users who are inbound tourists. There are limitations to this research, the most obvious limitation being the language of the survey instrument. This survey was administered in only four languages (English, Chinese, Japanese, and Korean) and used a self-administered data collection method due to the language limits of the research team and the nationalities of inbound tourists. A more appropriate survey instrument would use the mother language of all inbound tourists. The second limitation is that the time frame of the data collection is shorter than one season. In Taiwan, August and September are the peak season and the majority of international tourists visit during these 2 months. Future studies should consider collecting data in both the low and the high seasons. Another limitation was in the number of responses, which could be increased in order to obtain a more representative sample. This could be achieved by the researchers actually being in the individual Taipei MRT stations collecting information on all routes. This would have the dual aim of increasing respondent numbers and minimizing the bias associated with the data collection from certain stations and the influence of specific ethos associated with those inbound tourists at those MRT stations.

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