Pattaya Public Transportation for Future Tourism: Is Baht Bus a Solution?

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Abstract

Pattaya's dramatic economic growth had not only attracted tens of thousands of new residents and millions of tourists, but had also ushered in the kind of vexing transportation woes. The issue was an increasingly worrisome one for Pattaya city hall and for other entities involved in designing, planning, developing, and administering transportation systems. Pattaya's inbound tourism logistics had special characteristics, in that the city had long used the "baht bus" (the so-called *rot-song-taew*) as its primary mode of public transportation. A key issue is whether the ubiquitous blue-colored baht buses could be re-conceptualized and enrolled into the mix of options for addressing Pattaya's chronic traffic problems. Particularly in conjunction with an approach to urban transportation systems known as "Demand Responsive Transportation" (DRT), the baht bus was viewed by some inbound logistics specialist and R&D personnel in Pattaya city hall as having the potential to become a core component of an innovative inbound logistics system for the city.

The case presents basic logistics information on Pattaya tourism -- such as baht bus responsiveness and the operating costs on each route -- for

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the use in conducting a logical design of DRT for all four baht bus routes. Further, the case study describes some conflicts of interest, constraints and limitations that occurred in earlier transportation development projects. It also insinuates both the inhibitors and the opportunities against for being scrutinized whether or not DRT is likely to be the tourism logistics solution for Pattaya.

Keywords: Inbound Tourism Logistics, Demand Responsive Transportation, Logistics Design

ระบบขนส่งสาธารณะเพื่อการท่องเที่ยวเมืองพัทยา: ทางออกโดยรถสองแถว?

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บทคัดย่อ

การเจริญเติบโตทางเศรษฐกิจของเมืองพัทยาไม่เพียงแค่ดึงดูดประชากรผู้พักอาศัยและนักท่องเที่ยวจำนวนมากแต่ยังนำไปสู่การจราจรที่วุ่นวายของเมือง ปัญหาการจราจรนี้สร้างความกังวลให้กับศาลาว่าการเมืองพัทยาและหน่วยงานที่เกี่ยวข้องกับการออกแบบ วางแผน พัฒนา และบริหารจัดการระบบคมนาคม โลจิสติกส์การท่องเที่ยวภายในเมืองพัทยามีลักษณะเฉพาะตัว พัทยา มีการใช้รถสองแถวเป็นรูปแบบการคมนาคมหลักมาเป็นเวลานาน เป็นไปได้หรือไม่ที่จะปรับเปลี่ยนแนวคิดของรถสองแถวที่มีอยู่ทั่วเมืองพัทยาและผสมผสานกับการคมนาคมรูปแบบอื่น ๆ เพื่อการจัดการกับปัญหาการจราจรของเมืองพัทยา การใช้รถสองแถวตามแนวทางของระบบขนส่งในเมืองที่เรียกว่า “ระบบขนส่งแบบตอบสนองความต้องการ” ทำให้รถสองแถวมีศักยภาพในการเป็นองค์ประกอบหลักของระบบโลจิสติกส์ในเมืองจากมุมมองของผู้เชี่ยวชาญด้านโลจิสติกส์ในเมืองและฝ่ายวิจัยและพัฒนาของศาลาว่าการเมืองพัทยา

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ผู้สนใจกรณีศึกษาไปใช้เพื่อวัตถุประสงค์อื่นสามารถติดต่อขออนุญาตได้จากเจ้าของลิขสิทธิ์ข้างต้น

กรณีศึกษานี้นำเสนอข้อมูลพื้นฐานด้านโลจิสติกส์การท่องเที่ยวของเมืองพัทยา เช่น ความสามารถในการตอบสนองการท่องเที่ยวของรถสองแถวและค่าใช้จ่ายในการปฏิบัติการในแต่ละเส้นทางเดินรถ เพื่อใช้ในการออกแบบเชิงตรรกะแก่ระบบขนส่งแบบตอบสนองความต้องการในเส้นทางเดินรถสองแถว 4 เส้นทาง นอกจากนี้ นำเสนอถึงข้อขัดแย้ง เงื่อนไข และข้อจำกัดซึ่งเกิดขึ้นในโครงการพัฒนาระบบขนส่งที่ผ่านมา รวมถึงปัจจัยยับยั้งและโอกาสที่เกิดขึ้นจากระบบขนส่งนี้ เพื่อการพินิจพิเคราะห์ว่าเป็นไปได้หรือไม่ที่ระบบขนส่งแบบตอบสนองความต้องการจะใช้เป็นทางออกสำหรับโลจิสติกส์การท่องเที่ยวในเมืองสำหรับเมืองพัทยา

คำสำคัญ: โลจิสติกส์การท่องเที่ยวในเมือง ระบบขนส่งแบบตอบสนองความต้องการ การออกแบบโลจิสติกส์

It had long been known that Pattaya was not just an ordinary tourism destination, but one with a colorful history as well. The main "rest and rehabilitation" venue for American soldiers and sailors during the Vietnam War era, when American ships made regular calls at the nearby Sattahip headquarters port of the Royal Thai Navy, the city had mushroomed from the small fishing village of the early-1960s into one of Thailand's major tourist attractions by the 1990s. Accompanying such dramatic growth had been increased numbers of hotels and resort facilities, houses and condominiums, shopping malls, entertainment establishments, and of course residents and tourists – all of which had begun by the first decade of the twenty-first century to cause severe strains on the city's transportation infrastructure. Thus, as the mayor of the city and other city officials strove to modernize and position their tourist haven for the ever-increasing numbers of tourists visiting Pattaya each year, inbound tourism logistics had become a city planning issue of increasing urgency.

Accompanying Pattaya's rapid development population "explosion," particularly after the year 2000, had been many attempts to improve the tourism infrastructure through revamping and upgrading the transportation grid, with the so-called baht bus having often been assigned a central role, at least *initially*. However, despite these periodic episodes of intense focus on the baht bus as a proposed major element of such plans, most of the attempted projects had ended up as mere appendages to, or minor elements of, other transportation modes that were proposed and pursued simultaneously. Further, with a diversity of views about the role of the baht bus in the overall transportation mix (i.e., some suggesting that it be discarded, while others argued for its improvement), implementation of earlier visions of the baht bus' role had become increasingly fractionated and diluted. Consequently, only minor improvements in the baht bus component of the plan were ever implemented. Moreover, earlier-planned *major* improvements in the baht bus component of envisioned transport improvements (such as schemes to limit traffic volume and baht bus routes, and implementation of bus service substitutes) had fallen by the wayside almost from the moment of their design, as they encountered resistance to change from entrenched forces.

Now, however, in the aftermath of the 2010 Pattaya Tourism Development Plan that had been collaboratively developed by Pattaya city hall and the Thailand Tourism Authority (TOT), the role of the baht bus in

Pattaya's vision of sustainable and creative tourism was once again being resurrected and discussed, along with what many viewed as a promising new approach to urban transport design, "Demand Responsive Transportation." It remained to be determined whether this latest drive for a coherent and integrated system would, like its predecessor plans, be short-lived or sustained to the point that a Demand Responsive Transportation system with the baht bus at its core would become an integral component of Pattaya's solution to the inbound logistics problem.

Pattaya Baht Bus Transportation Infrastructure and Operations

Pattaya -- unlike the country's major metropolises (e.g., Bangkok, Chiang Mai, etc.) – had never developed a fleet of municipal buses as the core of its public transportation system. Rather, apart from personally owned or hired automobiles, local residents and tourists alike had long moved about the city *via* mostly taxis (of the motorbike and, more recently, vehicle variety), vans, and "baht buses" (also called "baht taxis"). The latter mode of intra-city transport, baht buses – "*rot-song-taew*" in Thai (meaning, literally, "a car with two row seats") – had been a prominent feature of Pattaya's streets and sois since its emergence from its fishing village days of the 1950s and 1960s. It was invariably less expensive than vehicle taxis and most vans, often nearly price-competitive with motorcycle taxis, and in the view of many considerably less dangerous than was getting around the city riding pillion on a motorcycle taxi.

Overview of the Pattaya Baht Bus System

The city had a total of some 700 buses organized into 5 baht bus lines. (In Table 1 below, the five lines and their vehicle capacities are shown.) Changes in the number of lines and other adjustments required the involvement of the Ministry of Transport, which reviewed all such requests and assessed the appropriateness of, for example, a proposed new route before granting its permission. The Bali Hai Pier – Banglamung District Office had been the most recent route to established and approved by the Ministry. Despite this involvement, the Ministry of Transport played a mostly supportive rolein that primary authority, with responsibility remaining with the Transport Authorities Office, Ministry of Transport.

Table 1: Vehicle Capacities of the Five Baht Bus Lines

Line no.	Name	Distance (Km.)	Quantity (Vehicle)
5	Chareonrat Pattana villege-Na Jomtien	29	187-340
6	City Circle	16	187-340
6079	Na Klua - Siam Country Club	19.3	10-12
7	North Pattaya - Central Pattaya	23	14-20
4	Bali Hai Pier - Banglamung District Office	10	10-12

* The Na Klua-Siam Country Club baht bus line currently had minimal passenger demand.
Source: Chonburi Transportation Authority Office

The owners of the approximately 700 baht buses were required to be members of the Pattaya Bus Cooperative established by Pattaya city and operated along designated routes around the heart of Pattaya. The work paid relatively well, with many drivers able to earn up to 50,000 baht per month from operating along *ad hoc* routes to specific tourist attractions, especially for shopping purposes.

Baht buses were strictly required to follow the promulgated rules and regulations governing various aspects of the buses' operations. Some of those rules pertained to misconduct of various types by bus operators. For example, the Pattaya Bus Cooperative had recently established new regulations specifying sanctions for misbehaving baht bus drivers and car rental owners. For violating the regulation specifying that red- and yellow-stamped buses must operate on alternate days on certain streets (especially Pattaya Beach Road, where disorderly bus parking had greatly increased the congestion), the penalty was set at 100 baht. The specified penalty for over-charging of fares and for abandonment of passengers at inappropriate destinations was a 500 baht fine. Inappropriate dress or rude behavior subjected the offending driver to a 200 baht fine. Recurrent offenses resulted in a 3- to 7-day suspension from their routes, while previously convicted offenders who refused to change their behavior could be altogether severed from the system.

In terms of transport regulation, small buses operating on designated routes were obliged to run from 8.30 to at least 16.30. However, because of both the largenumber of tourists and the fact that baht buses were independent operators, not municipal employees or contractors, drivers could freely drive and pick up passengers pretty much as they pleased. As a result, vehicle routes were overlapping, and vehicles were overcrowded on the main routes – largely in consequence of baht bus service being responsive to passenger volumes and travel needs, even though in redundancy.

On every baht bus, there were attachments containing a breakdown of fares based on distance traveled. There were also feedback forms in Thai and English, along with hotline numbers for use in contacting officials able to assist in any kind of travel difficulty.

Some Key Aspects of Baht Bus Operations

In terms of micro views and of what mattered from a "systems perspective," the way the baht bus operated could be described as one of its main attractions. That is, along with the usually more expensive vans and taxis, it was a "non-fixed-route" mode of transportation that enabled baht buses to be more flexible in terms of changes in passenger demand. Responding to the needs of passengers via increased flexibility on a given route was currently done by either (a) allocating a higher proportion of vehicles to areas with a high density of tourists and tourist attractions (only a minority of vehicles operated around the city), or (b) picking up passengers and charging them a special group fare.

Further, although a *permanent* change in routes required the approval of the Ministry of Transportation, adjustments could be and, often were, informally effected *within* routes. That is, baht bus drivers adjusted the routes when they believed there were too many vehicles on a particular route, resulting in too many unoccupied passenger seats. Routes could also be adjusted when the Cooperative became concerned about the service level in certain areas, e.g., if the number of passengers had recently increased. Some routes were temporarily established to serve passengers and then later terminated when the need no longer existed.

In the absence of careful system-wide vehicle allocation and planning, a potential downside to the temporary adjustment of routes to serve changing demand was additional traffic congestion. This was because when a new route was formed to meet passenger needs, old routes were not terminated, but rather remained in operation. This was deemed one of the contributing factors to the situation in which, outside of peak-demand time, most baht buses ran empty, or nearly so, much of the time.

A majority of baht buses were operated along and in the vicinity of the beach where the large number of tourists translated to high travel demand. In fact, whenever there was a backup on Beach Road at night, it was often because of a long line of baht buses bogging down the left lane, as they waited for tourists and other passengers.

While a baht bus typically operated based on four designated fixed routes, not all routes could fulfill the travel needs and travel volumes of Pattaya tourists. In fact, operating in this manner tended to result in an excessive number of baht buses. Thus, baht bus drives gravitated toward operating in an *ad-hoc* manner, e.g., by not driving their full route. That is, rather than proceeding from the start to the end of the route and then reversing direction and proceeding from route end to route start, baht bus drivers would reverse direction at some intermediate point along their routes. In addition, in practice, baht bus did not always operate within each designated route. For example, itwas not unusual to see baht buses that had been assigned to Pattaya circle routes appearing on the North Pattaya-Central Pattaya route.

Transfer points located around the intersection of major roadsenabled drivers to easily change direction from the current route to others when the current route had too few (or no) passengers. Transfer points could thus help reduce risk from demand uncertainty. However, it was believed that this approach also contributed to traffic congestion on the main streets, especially during the peak periods.

New road networks (including over- and underpasses) and baht bus routes in the city were periodically constructed and/or reconfigured in the attempt to mitigate traffic congestion. However, Pattaya's street construction endeavors had now essentially reached their limit. This reality, coupled with the strong voice of residents requesting a resolution of increased traffic congestion in the city, made it imperative that bath bus operations be improved in such a manner that they could become a solution for, instead of a contributor to, the growing congestion problem.

Select Developments in Baht Bus History in Pattaya

Earlier, in 2003, several private companies, in pursuit of what at the time seemed to them like a good business opportunity, had established their own bus services, featuring air-conditioned buses. However, their vehicles were in operation for a short period before ceasing their services due to their expensive fares, extended waiting hours, and limited bus stops. Meanwhile, the baht bus -- although by no means the most elegant or comfortable mode of getting about Pattaya -- survived this brief competitive challenge with complete aplomb, largely because it had the virtue of being flexible, convenient and inexpensive.

Nonetheless, in 2006, as a kind of quality alternative to the rather uncomfortable baht buses, Pattaya City launched an air-conditioned microbus service with scheduled stops along designated bus routescovering Pattaya, Naklua and Jomtien Beach. This service, quickly dubbed the "Pattaya Beach Bus," initially consisted of three lines, serviced by coaches in three different colours -- Red, Green and Yellow -- to make it easy for passengers to identify the lines. (Bus stops along the routes were also colour-coded and numbered, so that the passengers knew where to board and disembark.) These modern microbuses could seat up to 30 people and charged a flat rate of 30 Baht for a one-way ride, regardless of how far a passenger traveled. The buses, all of which originated from the Big C Supercenter/Sukhumvit branch, ran from 6 am to 2 am.

Alas, by early 2008, only a few buses of the microbus Red Line could still be spotted, occasionally; and by mid-2011, the Pattaya Beach Bus project had fully come to an end. The effort to establish an inner-city, air-conditioned bus service had totally failed. Some attributed the failure to the reluctance of passengers to stand in line. *"People were still familiar with the way they [could] hop on and hop off freely along the [baht bus] route; they did seem not willing to wait in line," asserted the head of traffic research at Pattaya city hall. "Furthermore, baht bus drivers also drove [up] and pulled over their vehicles in a way [that] blocked the bus driving lane."*

Meanwhile, traffic congestion throughout the city continued to worsen. To address the problem, some knowledgeable observers averred that it would be helpful if the number of baht buses were reduced by half. However, given that such an action would have deprived 350 baht bus drivers of their source of livelihood, few actually believed that city leaders would ever attempt such a remedy. Thus, remaining to be worked out was the question of how to properly operate the baht bus under the special characteristics and conditions of Pattaya City, and in a manner that would help alleviate the growing congestion problem.

Select Blogs from Tourists

From a tourist perspective, there continued to be a number of vexing issues concerning the ubiquitous, blue-colored baht buses that plied the city's streets and sois. That these modes of transport had not been entirely satisfactory to many of them was evident from a perusal of some

of the more common tourist complaints and feedback, some of which could be viewed on local public blog sites. Allegations of fare over-charging were not uncommon, despite the statement from Chonburi Transportation Authorities Office that *". . . the regular fare of mini bus in Pattaya is not over 10 baht per person according to the law of enforcement by the department of land transport' . . . ."*

Further, while it was the city's most convenient form of transport, most foreign tourists had no previous experience with the baht bus and frequently found the process of getting from one part of town to another by baht bus frustrating and often bewildering. Commented one blogger on a Pattaya public blog site: *". . . tourists at first are a little afraid to ride the baht bus, because they just don't know how it works. . . . If the driver should change from your expected routing, it may be necessary to get off, pay and then catch another baht bus going the direction you want to travel."* The prospect of having to embark and then disembark from multiple baht buses before reaching their intended destination – all the while being unsure whether the next baht bus would in fact take them all the way to their final destination -- was sometimes disconcerting to tourists, whose home-country intra-city travel experiences were likely to have been less fraught with "guess work" and spur-of-the-moment route changes while en route. These experiences had led one blogger to warn tourist: *" . . . [D]on't try it unless you know the price . . . . [The song-taew system is a little confusing. I was there with a local and [had a] problem getting around. . . . I still have yet to figure out the system to date . . . ."*

Despite the ongoing complaints about baht bus service and operations, and notwithstanding the fact that earlier ambitious plans for the baht bus' role in the future transportation infrastructure had come to naught, the idea of the <u>*potential*</u> of the baht bus to help solve Pattaya's inbound tourism logistics conundrum was slowly being revived. One reason for the longevity of this idea was that the baht bus seemed to fit the residential living style of most inhabitants of the city and, with changes, might even succeed in better meeting the transport needs of larger numbers of tourists, just as the popular "tuktuk" mode of transportation had accomplished in some other Thai cities.

Additionally, there was real question in the minds of the Pattaya mayor, Mr. Ittipol Khunpleum, and the head of the Chonburi Transportation

Authority as to whether any core transportation infrastructure for the city could be developed in the absence of the baht bus having a prominent role. In any case, all were in agreement that without a greatly improved and integrated core infrastructure (whether or not that incorporated the baht bus), tourism in the city was bound to suffer, as would Pattaya's hope of becoming a modern, urbanized beach city. One had but to review Pattaya's explosive growth and development to appreciate why.

Pattaya: Past, Present, and Projected Future

As a prime tourist destination, with most of its 31 local communities having been transformed into providers of tourism services and facilities after years of successful tourism development, Pattaya by the year 2000 had become a magnet drawing people from all regions of the country, as well as from foreign countries, to live and work in the city. Basic information concerning the size, number and density of population in the city during 2000-2010 are shown in Table 2 below. As can be seen, both the population and population density of Pattaya expanded dramatically in the decade from 2000 to 2010.

Table 2: Population in Pattaya City during 2000-2010

Year	Total population	Male	Female	Total household
2000	82,133	40,127	42,006	14,192
2001	85,533	41,606	43,927	14,827
2002	89,413	43,123	46,290	15,445
2003	92,878	44,716	48,162	16,088
2004	91,855	43,812	48,043	16,992
2005	96,654	45,799	50,855	17,963
2006	98,992	46,828	52,164	18,436
2007	102,612	48,438	54,174	18,948
2008	104,797	49,241	55,556	19,326
2009	106,214	49,589	56,625	19,702
2010	107,406	50,075	57,331	19,900

Source: Office of the Pattaya City Manager

The travel industry was by far the most important economic activity of the city, with about 87 percent of the working population engaged in either trading or providing services for the tourism industry. At approximately 270,000 baht of per capita income per year, Pattaya residents enjoyed a standard of living higher than most cities of its size in Thailand – a status that continued to make it an attractive employment and business destination for Thais from other areas of the country.

As revealed in several recent outlook reports, it was a foregone conclusion that Pattaya would continue to grow at a fast clip. This was confirmed by way of a number of growth-inducing factors and trends. For example, there were the sheer numbers of new residential and commercial development projects both under way and planned, e.g., the construction of a marina and the nearby Royal Varuna Yacht Club.

Further, with respect to residential developments, the average number of units per project continued to increase, surpassing 2010 numbers. This was largely the result of several large scale projects, totaling more than 1,000 units, that had been launched in 2011. The 2012 condominium market continued to grow, albeit with a lower number of newly-launched units. However, there had been some shifts from the 1990s when Pattayaitself had been the most popular zone for condominium development. From 2001 onwards, the Jomtien area had shown faster growth due to its larger amount of land for potential development, as well as the new condominium projects that were launched in the aftermath of the Pattaya City Administration Office's 2005 initiation of development of Jomtien Sai 2 Road, which ran parallel to the beachfront road and was close by Jomtien Beach. Additionally, the 9,000 condominium units already in the pipeline for completion during 2012-2015 in Pratumnak area would be higher than in any other area. Figure 1 shows the growth in the number of condominium room units in key Pattaya areas during the years 1990 through 2011.

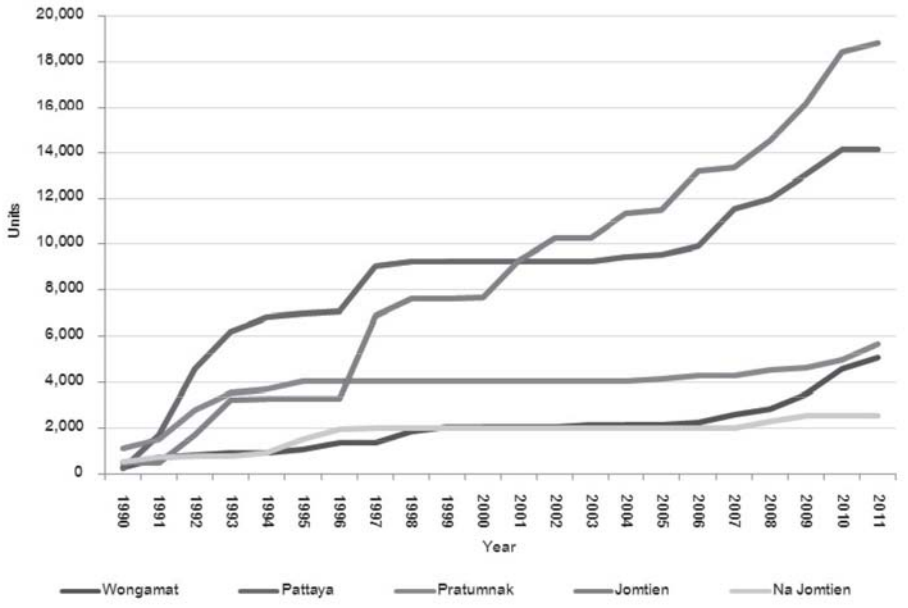

Figure 1: Number of Condominium Room Units in Key Pattaya Areas, 1990-2011

Source: www.colliers.co.th

Further confirmation of Pattaya's continuation along a path of rapid growth could be found in the fact that South Pattaya was fast becoming the city's most prestigious and valuable real estate and in the fact that rental yields in Pattaya were actually higher than those in Bangkok. Some developments in the city had long waiting lists and realized rental yields of around 6-8 percent, compared to around 4 per cent in Bangkok. The ever-increasing number of tourists visiting the city each year – some from countries of origin not earlier well represented in the tourist mix – also signaled an ever-expanding base of potential customers for the new condominium developments. Indian visitors, for example had significantly increased their presence, rocketing almost eight-fold from 300,000 in 2011 to a projected two million by 2013.

Evident trends in tourism also pointed to a continuing economic boom in Pattaya. A number of incubating factors were behind increasing tourist numbers – including, the development of new roads, new attractions, and new investments. Removal of the limitation of supply of transport would only further propel the trend.

Vision for Pattaya City

The initial development of guidelines for sustainable tourism development in Pattaya city had started with the vision for new city image as *"New Pattaya: The World Class Greenovative Tourism City,"* with the concomitant application of the *3 R's* by which the vision was to be attained. The *3 R's* were to (1) Rebrand (2) Revitalize and Develop Facilities and (3) Raising Capacity and Capability.[1]

Tourism and Transportation Development in Pattaya

The new vision for Pattaya City encompassed both a tourism and transportation component. For the vision to be realized, both components would need to work in synchronization with each other.

Tourism Development Plan

By the year 2000, Pattaya's economic lifeline, heretofore based on the nightlife-based tourism and a majority of Western tourists using English as the *lingua franca*, had been significantly transformed. Thailand's increased economic growth -- along with the influences of in-migrating entrepreneurs, investors, immigrants, and tourists – had dramatically changed the face of the city. From that year onward, a casual observer perched in the heart of the city was as likely to see an Indian IT professional as a Middle Eastern family, or a Russian couple or members of a Chinese tour group. Pattaya had now blossomed into a broad mixture of residents, tourists, and tourists-turn-residents with an effusion of urbanized lifestyles.[2]

Tourism development itself began to undergo a similar transformation, as city leaders, motivated largely by concerns about social and environmental problems generated by the consumption-driven materialism that often accompanied mass tourism, shifted the focus to tourism *sustainability*. Rising complaints about waste water and other pollution management issues had made the headlines from time to time, leading to calls for a different paradigm for tourism development. Thus, in collaboration with the Thailand Tourism Authority (TOT) and Pattaya city hall, the 2010 tourism development plan focused on sustainable and creative tourism schemes as the main strategic thrusts of the city's future tourism development endeavors. To this end, four development themeswere set as follows:

1. Eco-tourism: to preserve marine nature areas with beautiful coral reefs around the island.
2. Improvement of tourism capacities in all areas of Pattaya municipality and partial areas of Jomtien municipality.
3. Promotion of cultural tourism in areas of special interest – including the city's eastern and southern sides. To accomplish this, the city center was to be linked to this area by abus transportation network covering HuaiYai, Pattaya, and Jomtien.
4. Preservation of such natural resources as water and forests; promoting local agricultural products; and, developing areas with low density and large plots of land.

Transportation Development Plan

The Master Plan for the development of transportation embraced the concept of *"sustainable transport systems"* and included various transportation projects:

- Development of a transportation system directly linking the airport and the city;
- Development of a high speed (250 km/hour) rail line linking Bangkok, Pattaya, and Rayong, along with an express train linking three cities; and,
- Development of a highway connection between Pattaya and Mabtaput

In addition to the government's focus on the creation of an efficient public transport system connecting Pattaya to other cities and transport facilities, there was also recognition in the Plan of the need to improve the transport system *within* the city. This was in concert with the aim of the Tourism Development portion of the overall plan, henceforth, to diversify Pattaya tourism beyond the traditional attractions of nightlife entertainment and to promote local features such as sport, nature and culture. Such tourism development would necessarily entail the development of additional clusters of tourism facilities outside of the entertainment-based businesses of central Pattaya, which themselves were only a part of the 38 available tourist attractions in and close by municipal center (see Table 3 below). There were another 12 places with development potential outside the city center (see attractions 39 through 50 below).

Table 3: List of Tourist Attractions in and around Pattaya City

Tourist attractions in city				Tourist attractions outside city	
1	Pattaya water park	20	Pattaya Pirom Submarine	39	Khao Cheechan Buddha Image
2	Bottle museum	21	Wongphrachan beach	40	Wat Yan Sang Wararam
3	The Sanctury of Truth	22	Elephant Garden	41	Nong Nooch Garden and Resort
4	Mini Siam	23	Super Kart Racing	42	The Million Years Stone Park and Pattaya Crocodile Farm
5	Pattaya beach	24	Monster World	43	Elephant Villege Pattaya
6	Wongamat beach	25	Tuxedo Magic Castle	44	Three Kingdoms Park
7	Jomtien beach	26	Siriphon Orchid Farm	45	The Horseshoe Point Resort Pattaya
8	Koh Lan	27	Paintball Park and Bungee Jump	46	Sriracha Tiger Zoo
9	Mabprachan reservior	28	Snake Show	47	Khao Kheow Open Zoo
10	Point of View Pattaya	29	N S P Snake Show	48	Bira International Circuit
11	Suan Chaloemphrakiat	30	Pattaya Airpark	49	Pattaya Flying Club
12	Pattaya Kart Speedway	31	Lakeland Water and Cable Ski	50	Silver Lake Vineyard
13	Wang Sam Sien	32	S K Pattaya Ranch		
14	Khomluang Chumpon Khet Udomsak Monument	33	Chang Siam		
15	Viharnra Sien	34	Elephants Trekking		
16	Underwater World	35	Wonderland Pattaya		
17	Ripley's Believe It or Not! museum	36	Easy Kart		
18	Sukhawadee	37	Pattaya Floating Market		
19	Khao Phratamnak	38	Pattaya Circus		

Source: Tourism Authority of Thailand

It was understood that this component of the tourism development plan would be a challenge in terms of enabling transportation arrangements. There was evidence that few tourists ever visited most of the sites on the list, either because they did not know of the attractions or because they did not know how to get to them. Apart from the beaches, public transportation including baht buses in Pattaya mainly served the municipal core where an abundance of restaurants, shops and entertainment facilities were located. Direct transport to the attractions further away from the city center was possible only by privately hired vehicles and taxis or vans. Baht buses took tourists only to the nearest place on the main road, from

which tourists had to transit to the attractions of interest by motorcycle taxi or even by walking.

Many local officials were acutely aware that for the master plan for future Pattaya tourism to be viable, transport facilities within the city – but especially to and from tourist sites outside the city – would have to be upgraded and expanded. To this end, with the recent boom in tourist arrivals, several initiatives to reduce the ever-worsening traffic congestion had resulted in a number of city projects that sought to take into account various aspects of development including economics, tourism, logistics, welfare, and well-being. Four projects of special note included:

- The renewal of Pattaya Beach Bus Service serving the Pattaya Floating Market, Jomtien, the Second Road, and Pattaya proper;
- The *designated baht bus stop* projectwhereby 12 bus stops were created to pre-cludepassenger-dictated ones, thuseasing congestion and improving safety;
- The Pattaya Monorail project, which was expected to help decongest intra-city travel by offering tourists a comfortable commute around the resort on a monorail as early as 2014; and,
- The *parking without worrying and moving safely* project – a parking service center for cars and boats, aimed at greater tourist travel comfort and safety.

If these projects, along with others under consideration, produced the desired results, they would go a long way toward alleviating the City's traffic congestion. In addition, some transportation planning officials believed that they might well facilitate and complement a new "Demand Responsive Transportation" system for Pattaya.

Demand Responsive Transportation

Demand Responsive Transportation (DRT) was an approach to the delivery of transportation services that had been developed in the so-called "first world" nations to enable service providers to better respond to passenger needs. The adoption of DRT was supposed to reduce the waiting time problem resulting from various transportation system constraints and limitations. As such, it was of more than passing interest to Pattayacity hall. As shown in Figure 2 below, there were several key characteristics of demand responsive transportation.

Route	Fixed months in advance			→	Fixed 1 hour before trip
Vehicle	Limited period of availability			→	Long periods of availability
	1 type			→	Many types
Operator	Commercial	→	Competitive tender	→	Selected 1 hour before trip
Passenger	Special transport services	→	General public only	→	No restriction
Payment	Pay on vehicle	→	Season ticket	→	Smart card
	Low demand responsiveness	⟶			**High demand responsiveness**

Source: Scottish Executive (2006)

Figure 2: Key Characteristics of Demand Responsive Transportation

Essentially, by combining techniques for capacity management and dynamic scheduling, the DRT enabled vehicle allocation by taking into account available service capabilities at specific times, as well as travel needs based upon the request of individual passengers. As such, the DRT transportation system was deemed suitable for areas with specific requirements such as areas with fluctuating tourism demand. Moreover, tourism areas with a low density of tourists could also benefit from DRT when travel demand was low but with periodic upward spikes.

A major reason why the possibility of a DRT-based system was attractive under certain conditions had to with comparative operating costs. More specifically, the operating costs of traditional public transportation were high compared to DRT when travel demand was low because fixed route buses had to pass every stop regardless of the number of passengers onboard. But, when demand was high, offsetting this advantage of a DRT-based system was the fact that the costs of operating a DRT system were relatively high due to higher cost of the larger vehicle fleet required to be able to respond passenger service demands. The various degrees of responsiveness for each type of transport is shown in Table 4 below.

Table 4: Types of Transport Classified by Degree of Responsiveness

Registered bus options	Non-registered bus options	Taxi Options	Car Options
Post bus	**Restricted user education transport***	Single operator shared ride taxi	Wheels to work
Non-restricted user education transport	Shoppers' bus	Multi operator shared ride taxi	Social car scheme
Fixed route*	Care services		Car pool
Semi-fixed DRT	**Patient transport service***		Car club
Flexible area DRT	Community transport	**Single ride taxi***	**Private car***

Source: Mulley, C. and Nelson, J.D. (2009) Flexible transport services: A new market opportunity for public transport, Research in Transportation Economics, Vol. 25, pp. 39-45.

In the Thai context, only a few of the responsive modes of transport shown in the Table above were available – mainly in the form of private cars, single-ride taxis, restricted-user education transport, and patient transport services. The only bus option available was that of the fixed-route bus. Thus, transportation responsiveness in Thailand was mainly in the form of taxi and car options, a fact that contributed greatly to traffic congestion in the capital city and in major tourism cities like Pattaya.

The responsiveness of the existing baht bus service for tourism was still not adequate for purposes of a Demand Responsive Transportation system. Mostly, baht bus operated in designated routes, with service still not covering all tourist attractions and with often relatively long walking distances for tourists from the main street to the attractions. The service was responsive when baht bus routes directly passed the attractions and passengers were able to select their various routes for traveling, and did not have to walk in distances to and from the attractions. However, only 14 attractions (i.e., 36.8%) of the 38 primary onesshown in Table 3 met those criteria.

For Pattaya, the viability of Demand Responsive Transportation could be assessed by examining its operating costs. As DRT operated a semi-fixed route service, it was variable costs -- i.e., costs occurring when vehicles travel to pick up passengers who request them at a specific time and location --that were most germane to DRT decisions. DRT also had additional costs, i.e., "penalty costs," that did not enter the picture of fixed-route service. "Penalty costs" arose due to the inability of the vehicles to respond within the time and distance parameters requested by passengers. The idea was to keep penalty costs as low as possible when operating DRT.

Distance Rate (DR) -- the ratio of total variable costs and total service distances -- could be used as one of the measures to evaluate DRT viability. A simulation of DR value for DRT service showed that Bali Hi Pier-Banglamung District Office line had the highest DR (DR = 1.098), followed by Pattaya Circle line (DR = 1.078), Chareonratpattana village-Na Jomtienline (DR = 1.077), and North Pattaya-Central Pattayaline (DR = 1.069). Comparison of the DR of *conventional* baht bus and *DRT* baht bus revealed that the DR value for DRT service was decreased by 2.99%, 3.06%, 2.73%, and 3.18% for Bali Hi Pier-Banglamung District Office line, Pattaya Circle line, Chareonratpattana village-Na Jomtienline, and North Pattaya-Central Pattaya line, respectively. This reflected the differences in DRT utilization on each baht bus line.

Penalty costs were highest for the North Pattaya-Central Pattayaline. In descending order with respect to penalty costs, Pattaya Circle, Bali Hi Pier-Banglamung District Office line, and Chareonratpattana village-Na Jomtienline had had the next highest penalty costs. This finding revealed that operating DRT on different routes did not yield the same results. Instead, the characteristics of logistics requirements of the line also played an important role in DRT decisions. Table 5 below contains a summary of the results of a simulation analysis of DRT viability.

Table 5: DRT Viability Measures and Results from Simulation Analysis

Costs	Baht Bus Line			
	Chareonrat Pattana	**Pattaya Circle**	**North-Central Pattaya**	**Bali Hi Pier**
Penalty costs	207.74 (4)	212.69 (2)	237.73 (1)	210.10 (3)
Variable costs of DRT	1.107 (3)	1.112 (2)	1.104 (4)	1.132 (1)
DRT utilization	2.73% (4)	3.06% (2)	3.18% (1)	2.99% (3)

*Note***:** The number in parentheses connotes rank.
Source: Ngamsirijit and Tepanon (2013)

These then were some of the main considerations that had to be taken into account in pursuing a transportation development incorporating DRT, as a complement to the new strategic vision and plan for tourism development in Pattaya. How the baht bus would fit in the scheme remained to be decided. But, several organizational entities would have input in the decision.

Key Organizational Influences on the Pattaya Transportation System

Four principal entities were entitled to input into whatever decisions were ultimately taken concerning the Pattaya's evolving transportation network, including the role of the baht bus in Pattaya's future transportation system. First was the Pattaya Police Department, which was in charge of managing traffic flow, implementing traffic regulations, and securing the civilians and tourists when traveling in the city. Second was the Chonburi Transportation Authority Office, which was responsible for vehicle route design and arrangement, vehicle registration, and national transportation policy implementation. Third was Pattaya City Hall, which had authority to initiate, develop, and improve the transportation infrastructure of the city. The final entity was the Pattaya Transport Cooperative, which operated the baht buses in designated routes around the city.

According to one of the transport professionals in Pattaya city hall, *"… They [transportation solution conflicts and failure of transportation projects] are due [to the fact that that there are] no specific authorities for them. In the end, [the] transportation system was . . . performed with little [and] loose control…"*

Over the years, many "solutions" for improvement of transportation system effectiveness had been proffered by nearly all of the multiple stakeholders of the transport system. Among the aforementioned stakeholders on the supply side (e.g., Pattaya city hall,baht bus owners and drivers, etc.) and demand side (e.g., residents, tourists, owners of entertainment facilities) of the equation, there were those who tended to focus on transportation system benefits instead of value creation from the system. For example, drivers and owners of baht buses typically came forth wielding their bargaining power on the city whenever there were transportation improvement projects, bus service projects in particular. They were quite afraid of losing any of the benefits to which they had grown accustomed. In this connection, their umbrella association, the Pattaya Transport Cooperative, invariably threw its support to its members and withheld support for projects to which the members objected. They could, and did, however throw their support behind projects that clearly served their self-interest – e.g., the city's proposal to arrest and charge any unregistered and counterfeit baht buses.

Additionally, other stakeholders, while perhaps well-meaning in the application of rules and regulations concerning the areas of their authority and responsibility, sometimes came up with "remedies" that *other* stakeholders felt made life more difficult. A case in point: To better organize the flow of traffic in the heart of the city, the Pattaya Police Department made Pattaya Sai 2, the main path to Beach Road, a one-way street. The result was a deceleration of traffic flow due tothe sheer number of buses headed to the Beach Road, but unable to approach it from either direction. In essence, theone-way traffic on Beach Road and Pattaya Sai 2 acted like a "*roundabout*" created by an imbalance of incoming and outgoing vehicles, with the former being greater than the latter. Baht bus responsiveness also suffered, as drivers now had to make a detour before being able to proceed in another direction around the city.

Faced with the earlier limited success and outright failure of many projects, solving Pattaya's resolve traffic problems, especially in its main streets, had been long in coming. With continually emerging new requirements and constraints, the design and development of Pattaya transportation system were getting tougher and harder to accomplish with each passing year, with no obvious resolution yet in sight. The mayor,

amidst constraints such as limitations of city space, mix of residents and tourists, and residential lifestyle, had to select an appropriate system from among several options for city transportation. And, this had to be accomplished while also bringing together all transport networks to facilitate travel; the city park buildings and related services; monorail transportation system to link the network to the destination for the convenience and benefits of tourists in the future; and, a responsive inbound transportation system within city. As he reflected on magnitude of the challenge before the city of Pattaya, the mayor wondered whether the city's inbound logistics could be alleviated, in whole or in part, through application of a *demand responsive transportation* ("DRT") approach.

Next Move: All Come Together

In a renewed earnest attempt to find a solution to Pattaya's inbound transportation logistics issue, working groups had been formed to maximize prospects of finding solutions that would be acceptable to all stakeholders in the city's transportation equation. Pattaya city hall was more determined to succeed than ever, now that it had become obvious that fragmented solutions could not improve overall transport system operations and logistics of the city. Theywas hoping that this time there would be nobody, especially the baht bus, to blame for the city's traffic congestion and related problems. Of necessity, this effort had to not only involve entities such as the four earlier-mentioned organizations having input into transport decisions, but also require changing attitudes towards planning and implementation of expected transport solutions in a more collaborative and integrativemanner.

Finally, Demand Responsive Transportation (DRT) was not something that could be designed by considering only the "big picture." Rather, if the city was to move in the direction of pur suing a DRT approach to public transportation, it would need to do so with a foundation of clear information about, and a clear understanding of, both the macro and micro sides of both supply and demand. Whether the newly composed working groups could work collaboratively on problem solving and thereby come up with the design of a new transportation system that would facilitate the city's pursuit of the vision of becoming a city of "sustainable tourism" was an open question.

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Endnotes

[1] In 2003, under the former Thaksin Shinawatra administration, "Designated Area for Sustainable Tourism Administration" (DASTA) was established. DASTA was set up as a public organization, with the roles and responsibilities over sustainable tourism operation, through coordination for integrated administration of areas with valuable tourism resources, with more flexibility and promptness in operation than that of government agencies and state enterprises, as an important driving force in the administration of the country's tourism industry both in short and long terms. Pattaya city's administrators had been pushing for the move to reclassify Pattaya and its surrounds in 2008. DASTA approved the application in 2009, allowing Pattaya city to swallow eight municipalities for sustainable tourism. They were the Municipality of Pong Sub-District, the Municipality of Na ChomThian Sub-District, the Municipality of Bang Lamung Sub-District, the Municipality of Takhian Tia Sub-District, the Municipality of HuaiYai Sub-District, the Municipality of Nong Prue, the Tambon Administrative Organization of Khao Mai Kaeo, and the Tambon Administrative Organization of Nong Pla Lai.

The 15 billion baht "Greenovative Tourism" city plan earmarked 132 projects, including developing transportation and tourist attractions. It aimed to declare Pattaya a green and clean city in 10 years. But cleaning up the streets of Pattaya involved more than just new buses and painting beach benches. The issues of local vice and foreign criminals living in Pattaya need to be addressed. Greenovative plan also needed to take into account reducing vice if Pattaya was to meet its tourism goals. One way to achieve this was to have a stronger police presence on the streets. Nevertheless, Mr Itthiphol said the city did not have any plans to address the problem of foreign criminals and added the current annual budget was adequate.

One of policies under the 3R's was designated as "Mobility Traffic of Pattaya City". It was broken down into the following temporally based focal points:

Short-term
- Solving road transport problems systematically and concretely.
- Shortening the queue by using Area Traffic Control (ATC). "No matter how many cars were, the traffic was still fast".
- Providing security for all people with traffic lights.
- Focusing on "service" as the key to traffic work.

Medium-term
- Carrying on underway development on Sukhumvit Road and Central Pattaya intersection according to the study of the needs of Pattaya citizens.
- Providing direct flight to Ou Tapao Airport to reach the Pattaya beach in 30 minutes.

Long-term
- Developing and enhancing transportation pooling and networking.

[2] In particular, the massive increase in the number of Russians and Eastern Europeans had ushered in some heretofore unprecedented changes. With their arrival came the opening of a number of venues at the far end of Walking Street, a major commercial thoroughfare, that catered specifically to Russians and where signs were only in Russian, with nothing in either English or Thai. More and more venues -- from massage outlets, to restaurants, to hotels – had signs in English, Thai *and* Russian. Consequently, the social conditions in Pattaya became as complex as they were varied. In walking along a street and asking for directions, a visitor no longer needed to ask a local person, as a foreign person whom he might encounter and who had actually lived here in Pattaya for a long time was just as likely to be able to provide a helpful answer.