

AN ANALYSIS OF SERVICE NEEDS FOR SELF-DRIVE TOURIST: PROPOSING FOR BETTER POLICIES FOR MALAYSIA'S ROAD NETWORK

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This paper introduces a number of factors that can be used to measure and understand tourist driving satisfaction in Malaysia. These factors can be analyzed for three different road-type segments: 'on the highway', 'en route to/from the destination' and 'within the destination'. To better address tourist preferences, tourism policy development should evaluate the factors that contribute to driving satisfaction for each of these segments. In the present study, an online survey was conducted to gather feedback from Malaysian drivers on their tourism-related driving experiences within the past 6 months. Chi square analysis was used to analyze 23 factors related to driving satisfaction among the three types of road segment. The results showed that, in general, self-drive tourists desire driving comfort, efficient travel time, cheap travel cost, beautiful natural surroundings and appropriate road safety infrastructure factors. These results may facilitate improvements to policies related to promoting tourism.

Keywords: *Self-drive Tourists, Road Service Needs, Difference of Road Segments, Policies and Countermeasures, and Malaysia.*

1. Transportation policies for Malaysian tourism

According to the United Nations World Tourism Organization (UNWTO), the tourism industry is the largest and fastest-growing economic sector in the world¹⁾. Malaysia, a country that is experiencing rapid tourism development, recorded 27.44 million international tourist arrivals in 2014; an increase of 6.3 percent over 2013²⁾. The domestic tourism market followed a similar trend, and significant annual growth is predicted³⁾. In light of the contribution of the tourism industry to economic and social development in Malaysia, the government has significantly increased efforts to develop infrastructure and facilities as well as marketing and promotion. Furthermore⁴⁾, reported that the country's Five Year Plan also included substantial tourism sector development, supplemented by the National Tourism Policy (NTP), National Physical Plan (NPP) and Economic Transformation Plan (ETP). The objective of Malaysia's Five Year Plan and National Tourism Policy (NTP) is to develop the tourism sector into a strong, sustainable and competitive industry.

To achieve this goal, the National Physical Plan (NPP) was implemented to help develop the physical infrastructure for tourism in each Malaysian state⁵⁾. The NPP showed that the tourism sector was divided into sustainable land-use development strategies and tourism development. Both

sustainable tourism infrastructure and country accessibility are given priority in this plan. However, this document assessed the impact of tourism development at a macroscopic level, at which is difficult to measure effectiveness. Similarly, the development of route networks and destination accessibility outlined in this document is aimed not only at tourism development but also at the country's road connectivity. Since the overall plan is to provide road connectivity for the country, the requirements of self-drive tourists were not addressed in detail.

On the other hand, the new tourism policy document titled "Strategic Review of Malaysia's Tourism Industry Policy and Implementation" (SRMTIPI) was introduced in March 2013. The purpose of this document was to review the existing government's tourism policies and to consolidate these policies at each level, to achieve the target of 36:168 (36 million tourists and RM168 billion in revenue) in 2020⁶⁾. This document listed detailed policy measures based on market segments and special interest niches; integrated cluster-based tourism destination development; public and private partnership management; targeted group marketing and promotion; and customized human resources training between economic corridors and training institutions. Furthermore, the SRMTIPI identified twelve new projects across five tourism themes (affordable luxury, nature adventure, family fun, events, entertainment, spa

and sports and business tourism) to enhance tourism yields. This project aimed to cater to different types of tourist simultaneously, ranging from shopper to nature lover, business traveler and family. Besides fully defining many new tourism product development strategies, the project also proposed changes to many different sectors that affect the tourism industry, such as public transportation, accessibility and connectivity, infrastructure, taxi services and others. Although this document contains much serious discussion of how to increase the contribution of the tourism sector to the gross national income, it also outlines the importance of improving the accessibility of tourism destinations for the self-drive tourist.

Most local tourists (70%) depend on private cars for tourism trips³⁾. The SRMTIPI identifies solutions for reducing traffic congestion around tourism destinations. However, this document fails to fully take into account drivers' preferences and behaviors during tourism trips. Encountering traffic problems en route to or from the destination will influence overall tourist satisfaction, as well as their intent to revisit the destination.

Therefore, understanding the factors that influence driving satisfaction during tourism trips is important to improve overall tourist satisfaction and the attractiveness of destinations. Research should be conducted in order to understand the factors that influence driver satisfaction in access and egress links, which, in turn, can facilitate the implementation of appropriate policies and countermeasures. The aim of the present study was to propose modifications to existing Malaysia tourism policies in order to improve the development of tourism infrastructure, particularly with respect to the private car traveler.

2. Review of driver satisfaction studies

A large number of tourism studies have been conducted in order to examine the impact of various characteristics of tourism destinations on overall tourist satisfaction or dissatisfaction^{7), 8), 9)}. These studies showed that overall tourist satisfaction is strongly related to elements such as accommodation, food and restaurants, attractions, weather, natural environment, transportation, and shopping facilities. Furthermore⁷⁾, showed that high levels of tourist satisfaction can have a positive impact on destination loyalty (i.e., intent to revisit). However, few studies have examined the effects of specific tourist travel mode experiences on overall satisfaction. The aforementioned studies fail to evaluate basic travel

satisfaction as proposed by¹⁰⁾, which takes into account pre-trip, en-route, in-destination and return trip experiences for travelers.

On the other hand, studies focusing on scenic tourism routes have investigated tourist satisfaction in the travel phrases mentioned above^{11), 12), 13), 14), 15)} examined self-drive tourist driving satisfaction regarding the aspects of tourism novelty seeking, theme tourism and drive tourism¹⁴⁾ found that driver satisfaction with scenic routes is highly influenced by driving motivation and the quality of roadside facilities. This study also found that the roadside facilities also contribute to destination loyalty. This finding is consistent with¹³⁾, who revealed that, in the context of driving satisfaction and touring routes, relevant tourism route developments and higher quality of driving performance factors are likely to increase intention to revisit and the recruitment of new tourists to the destination. Although¹³⁾ stresses the contribution of driving quality and revisit intention, driving satisfaction among different travel phrases is ignored. Similarly, the above studies focusing on overall tourist satisfaction focused only upon specific tourism routes and related tourism destination factors.

However, reliable evidence has also been found to indicate that self-drivers' satisfaction differs before the trip compared to during the trip¹⁶⁾. This study assessed the effects of road conditions on driver satisfaction using the travel satisfaction scale. The results of this study indicated that the satisfaction travel scale was influenced by traffic safety, annoyance with other road users, fatigue, distraction by billboards, and lack of speed and freedom over lane choice. These findings are consistent with those of¹⁷⁾, who suggested that comprehensive assessment of roadway level-of-service (LOS) should include drivers' expectations, road operational condition, population density, pavement quality and landscape quality factors that correlate well with customer satisfaction. Thus far, the method for measuring the roadway performance is based only on the LOS performance of the roadway itself. Furthermore, several studies have attempted to address the limitations of conventional LOS assessment by taking the driver's perspective into account¹⁸⁾. For example¹⁹⁾, produced LOS metrics consistent with drivers' subjective evaluations. However, this study analyzed customer satisfaction in terms of drivers' perceptions only with respect to specific traffic flow segments and the number of highway lanes. In addition, the study evaluated a limited set of metrics, including speed, freedom in driving, traffic interference, amenities and convenience. Interestingly, the results showed major differences between the new LOS model evaluation and that of the Highway Capacity Manual (HCM 2000) for the selected road section.

Many interesting findings on the factors contributing to overall tourist satisfaction and driver satisfaction have been reported by^{(13),(14),(16)}. However, most studies do not comprehensively examine the effects of driving conditions on tourist satisfaction. For example, previous studies have shown that self-drive tourists are affected by roadway conditions. However, no study has evaluated the influence of road infrastructure, transport facilities design, traffic operation, scenic highway environments, and tourism destination characteristics upon overall satisfaction. The present study will not only suggest ways to increase tourist satisfaction en route to and from the destination but also help design guidelines for road infrastructure design, traffic operation and scenery along corridors to tourism destinations.

3. Study framework

This chapter describes the study framework (Figure 1). The first section outlines aspects of a driver's background that may influence various driving satisfaction factors for three road segments: 'highway', 'en route to/from the destination', and 'within the destination'. Demographic characteristics, car ownership and driving experience, attitudes towards car and driving preferences are taken into account in order to understand the influences of different driver behaviors upon various driving satisfaction factors. Finally, the importance of driving satisfaction factors for each road segment is used to assess existing policy measures or propose policy revisions.

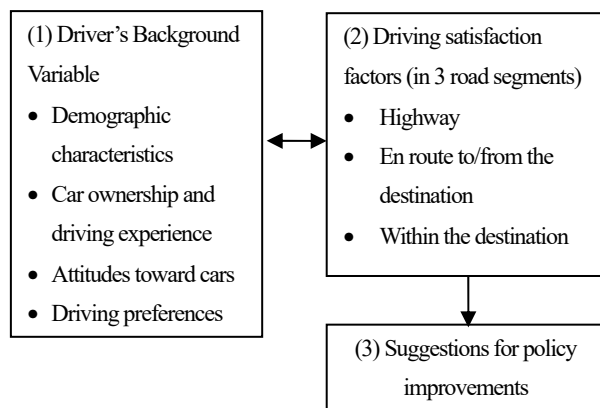


Fig. 1 Study framework

4. Data collection and analysis

This study targeted individual Malaysian drivers aged 18 years and older. An online survey was distributed by email to government and private institutions for data collection in January 2015. One hundred and three respondents completed

the questionnaire. Responses on a four-point scale were collected to questions in two sections: 1) attitudes toward car and driving preferences and 2) importance of driving satisfaction factors on the highway, en route to/from the destination and within the destination. In addition, multiple choice questions regarding demographic characteristics were provided in section 3. Respondents were asked to draw from their own perceptions in section 1, and to reflect upon their most recent (within the past 6 months) tourism driving experiences in section 2. Additionally, 23 similar driving satisfaction factor statements on various transportation aspects such as road infrastructure, safety, traffic conditions, road design, driving experience and level of service were included for each road segment.

SPSS version 22 was used for data management and analysis. Chi-square tests of independence were used to evaluate the relationships between driving satisfaction factors and demographic profiles; attitudes toward cars; and driving preferences on the highway, en route to/from the destination and within the destination. Data analysis was carried out as described below for each road segment.

Demographic characteristics (gender, age group, education and household income level)

- H_0 = Demographic characteristics are independent of driving satisfaction factors
- H_1 = Demographic characteristics and driving satisfaction factors are not independent
- Significant threshold: $P = 0.05$

The significant dependent factors then further evaluated by looking at differences between different groups using the Mann-Whitney test.

5. Analysis of important driving satisfaction factors

The discussion of the results begins with a brief explanation of respondent profiles, then reviews the most important driving satisfaction factors.

5.1. Sample profile

Young adults (55.3%), including both male (50.5%) and female (49.5%) drivers, were some of the tourists who have used private vehicles for holidays in Malaysia. Both men and women generally reported acceptable driving experience (i.e., 1–10 years of driving experience) and driving 1–10 times per year for tourism trips. Nearly 80% of drivers were highly educated, and more than half were full-time workers (Table 1). Drivers mainly fell into the middle (RM2,000–RM5,000) and

high (RM6,000 or more) categories of gross household income. The majority of the drivers came from households including four or fewer persons, which is similar to the average national household size (4.3 persons)²⁰.

Table 1 Sample profiles

Characteristics	(%)	Characteristics	(%)
1. Gender		2. Car ownership	
Male	50.5	No	15.5
Female	49.5	Yes	84.5
3. Age level		4. Education level	
Young (Below 30 years)	55.3	Non-graduate	20.4
Old (31 years & above)	44.7	Graduate	79.6
5. Employment		6. Household size	
Not employed	31.1	4 persons and less	70.3
Employed	68.9	5 persons and more	29.7
7. Driving experience		8. Annual tourism trips	
1 to 10 years	67	1 to 10 trips	83.5
More than 10 years	33	More than 10 trips	16.5
9. Household income level			
Lower income level	25.2		
Middle income level	42.7		
Upper income level	32.0		

Note: Total respondents =103

5.2. Driving satisfaction factors on the highway, en route to/from the destination and within the destination

This section summarizes the significant dependent driving satisfaction factors and its group effects on the highway, en route to/from the destination and within the destination based on the driver's background demographic characteristics (DC), car ownership and driving experience (CO & DE), attitudes toward cars (ATC) and driving preferences (DP) (refer to Table 2, Table 3 and Table 4).

(a) Demographic characteristics

Overall, the demographic characteristics have a little relationship on driving satisfaction factors among all road segments, particularly the highway. However, this study found that factors such as discounted highway fare ($\chi^2 = 6.683$, $df = 2$, $P = 0.035$), and the quality of road surface ($\chi^2 = 7.735$, $df = 2$,

$P = 0.021$) have significant relationship to increase driving satisfaction for female drivers and male in the 'en route to/from the destination' road segment. Discounted highway fare factor is more important for female driver ($Mdn = 56.93$), $U = 1074$, $z = -2.27$, $P < 0.05$. and the quality of road surface level did not significantly different to the driver ($Mdn\ male = 52.56$), ($Mdn\ female = 51.43$), $U = 1297$, $z = -0.33$, $P > 0.05$. In addition, the important on the quality of road surface and a number of lanes did not significantly different for income ($Mdn\ L = 50.41$, $Mdn\ H = 55.38$) and household size ($Mdn\ 4 = 48.49$, $Mdn\ 5 = 56.95$) level.

Moreover, the important to have consistency in travel time to the destination ($\chi^2 = 7.047$, $df = 2$, $P = 0.029$) especially in tourism area did not significantly different for the tourist with less than 4 ($Mdn = 50.33$) or more family members ($Mdn = 52.58$). Finally the travel speed factors (speeding while driving) and travel cost ($\chi^2 = 6.676$, $df = 2$, $P = 0.036$) are more important within the destination compared to other road segments to all drivers.

(b) Car ownership and driving experience

The results showed that there is no significant different between occasional and frequent self-driving tourist in evaluating the important factors in highway road segment. The ease of journey factors such as low levels of road construction ($U = 404$, $z = -0.510$, $P > 0.05$), more than two lanes on roadway ($U = 413$, $z = -0.340$, $P > 0.05$) and physically divided roadway ($U = 408$, $z = -0.432$, $P > 0.05$) significantly important to increase the driving satisfaction in highway. In addition, the presence of beautiful natural and urban landscapes ($\chi^2 = 12.39$, $df = 3$, $P = 0.015$) and the quality of road surface ($\chi^2 = 7.041$, $df = 2$, $P = 0.03$) was important on the en route to/from the destination compared with other road segments. However, these factors did not differ significantly from the car ownership, driving experiences level and total annual tourism trips.

(c) Attitudes toward cars

Table 2, 3 and 4 illustrate that there are significant differences between drivers who responded that 'driving cars is an important thing in my life' and those who had other attitudes. Interestingly, these results show that drivers who perceived cars as being important in their lives manifest a large number of factor influences to their driving satisfaction. These factors include driving speed, travel time, safety infrastructure, ease of driving and availability of road network connectivity.

The result shows that most of these factors are very important to increase driving satisfaction particularly 'on the highway' and 'en route to/from the destination' road

segments as the results show that most of the mean rank score are more than 50.00 ($Mdn=50.00>$). Furthermore, the drivers who responded '*I feel lost without a car*' on the highway segment shared similar driving satisfaction factors but less influenced by the driving speed factor. On the other hand, this result also showed that there are more factors affecting driving satisfaction for self-drive tourists in the 'within the destination' road segment, regardless of their attitudes toward cars.

(d) Driving preferences

The present findings show that, in general, drivers who prefer performance (*Doing well in life*) are affected by various driving satisfaction factors in the 'en route to/from the destination' and 'within the destination' road segments. This group of drivers agrees on the importance of road safety infrastructure, viewing beautiful panoramas during the journey, and having good parking and service area facilities on the highway and en route to/from the destination. However, not only that, factors such as travel time ('*speed while driving,*' '*arriving at the destination within the expected time*'), road safety infrastructure ('*more than two lanes on roadway to facilitate car movement,*' '*physically divided roadway*' and '*suitable roadway width*'), cost ('*discounted price on highway fare*') and ease of transit ('*congestion information through various media for a smoother journey,*' '*driving with visibility signs*', '*flat and straight roadways*' and '*easily available parking*') are more important to drivers with the same driving preferences within the destination than in the other two road segments.

The second major finding shows that, many factors have a strong influence to increase driving satisfaction on the highway for drivers with '*practical considerations*'. Furthermore, drivers that '*enjoy listening to music, news and talk shows*' while driving place great importance factors on the 'en route to/from the destination' road segment. Overall, this section indicates that the factors that influence to the overall driving satisfaction is varied depending on driving preferences

6. Policies improvement to facilitate tourism promotion in Malaysia

The latest Malaysia tourism policy document, titled "Strategic Review of Malaysia's Tourism Industry Policy and Implementation" (SRMTIPI) presented 12 new policies improvement to support for the tourism industry. This policies plan emerge various fields include the government, accessibility and connectivity, taxi service, rail service, infrastructure, public transport, human resources, destination

management, accommodation, marketing and promotion, safety and business environment⁶⁾.

This document discussed more on destination accessibility and connectivity by various modes of transport particularly by public transportation. However, only infrastructure segment provides action plans that include road improvement for self-drive tourist in highway segment and other traffic facilities for tourism development. The document also shows that the policies planned at macro level, as the policy is just to reduce congestion along major highways approaching tourism destinations during weekends and school holidays, by embarking on road widening program at congestion area along PLUS Expressway, to improve road signage for new tourism attractions and to have tourist information kiosks at rest and service area.

To improve the existing policies this study proposed that the government should evaluate a variety of traveler demographic and driving behavior characteristics when proposing new policies related to the road infrastructure. Thus, the present study deals only with tourist satisfaction while driving to or from tourist destination in three road segments. Understand the major driving satisfaction criteria not only important towards improving policies related to self-drive tourism or road infrastructure but also applicable to determine the successful of self-drive tourism sectors consistent with study by²¹⁾, that effectively determined the priorities in policies for Korean creative tourist industry. Therefore, this study outlined the possibility for improving the existing policies by including the roles of demographic and driver behavior characteristics to the driving satisfaction factors.

(1) Role of demographic characteristics

This study shows that less demographic characteristics influence to driving satisfaction factors. However, it was found that self-drive tourist has a tendency to satisfy or dissatisfy with driving speed, quality of road surface and travel cost factor. The proposal to widen roadways on highways in SRMTIPI is not sufficient because the results show that self-drive tourist give more attention in en route to/from destination, and within destination compares to the highway road segment. Highway road widening action is not so important, but the government should provide more quality of roadway within tourism destination and en route to /from tourist destination as this factor is significantly important to the driver regardless their gender and income group.

In addition, this study suggested that discounted fare on the highway should be promoted during long school holidays to encourage traffic redistribution to various tourism destinations.

This action plan also will encourage travel frequency choice as an effect by the dynamic of highway fare choices as mentioned by²²⁾.

(2) Role of car ownership and driving experiences

It was found that self-drive tourist with different car ownership and driving experiences group has a tendency to satisfy or dissatisfy in the driving factors such as ease of driving (*low level of road construction, more than two lanes, and quality of road surface*), road safety infrastructure (*physically divided roadway, roadway width*) and beautiful panorama in highway and en route to/from destination road segment compare to within destination segment. This finding shows that the government proposal to have highway road widening is not sufficient without enhancing more quality of road surface, increasing road safety aspect and improving roadway beautiful panorama.

Furthermore, finding shows that experiencing beautiful natural and urban landscapes along the journey begin at en route to/from the destination. This study recommended that, this factor can be improved by providing facilities such as roadside stop space at beautiful spot along the route. This activity will enhance tourist appreciation on the journey and overall satisfaction.

In addition, future policy plan should also include improvement on roadway landscapes as it reduce driving stress, provide better visual quality and roadway safety to the traveler²³⁾.

(3) Role of attitudes towards car

The driver satisfaction and dissatisfaction heavily depended on their attitudes towards car. The result shows that drivers who believed that driving a car is an important thing in my life are sensitive to multiple aspect on driving factors especially in highway and en route to/from destination. Moreover, drivers differently concern on driving at preferred speed, time making to the destination, travel information, quality of road surface and easily parking availability. Therefore, the government should mix the aspects of driving speed, travel information, quality on road surface in order to enhance the existing policy plan.

The speed factor gained considerable attention in all road segments especially to the driver that believe that driving a car is an important thing in my life. Therefore, it is recommended that a comprehensive measures designed action in each road sections should be considered especially within the destination by monitoring the amount of car at one time. Too many car enter the tourism destination may lead to severe congestion in both highway and en route to/from the destination such an

example of Cameron Highlands, Malaysia. This action indirectly improves the consistency of travel time to the destination and as well as experiencing comfortable rest areas

(4) Role of driving preferences

Overall, it can be seen that self-drive tourist who believed that driving car means doing well in life and practicality in relation to journey have more tendency to satisfy or dissatisfy with multiple aspects in driving factor for all road segments. Moreover, this group of driver is significantly different in evaluating each factors effect to their driving satisfaction.

In highway road segment, driving factors that are important include consistency in travel time, quality of road surface, physically divided roadway, easily available parking, experiencing beautiful natural and urban landscape and comfortable rest area. Moreover, similar important driving factors that affect driver in en route to/from destination segment also include easily available parking, beautiful natural and urban landscapes and comfortable rest area.

The tourist demand on road service level are diverse, therefore, this study suggests that the improvement action should include the parking facilities, comfortable rest area and beautiful natural and urban landscapes factors in order to improve self-drive tourism activities.

7. Conclusion

This study analyzed factors that contribute to driving satisfaction among self-drive tourists in Malaysia. The results showed that, in general, self-drive tourists desire driving comfort, efficient travel, cheap travel costs, beautiful natural surroundings and appropriate road safety infrastructure. In the case of SRMTIPI infrastructure policy plan important conclusions drawn from this study include:

- Lack of detailed tourism locations and road segments involved to the destination. The document just mentions one destination but in actual, many tourism destinations also need for road widening and road improvement.
- Lack of concern on the demand for travel speed, travel safety, cost efficiency and travel attractiveness in different road segments, which results to no priority in policies planning as it will create conflict with tourist overall satisfaction.
- Lack of concern on drivers' perception toward the tourism trips utility – concerning the drivers demographic and preferences will result in diverse

policy action regarding road facilities to the tourism destinations.

These findings represent an important contribution to the improvement of existing tourism policies, as well as a valuable addition to the literature on tourist satisfaction. Further research into the factors that affect tourist driving satisfaction is strongly recommended. The information gained through such research is critical to the establishment of sensible policies and action plans for improving the tourist experience, and to develop marketing campaigns that directly address the preferences and requirements of tourists.

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Table 2 Results of Mann-Whitney analysis on ‘highway’ road segment

Highway		DC			CO & DE			ATC			DP												
Driving satisfaction items		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Drive at preferred speed on leisure trip									VI**				VI									
2	Reduce driving speed or stop less frequently																				VI**	VI**	
3	Speed while driving																					VI**	
4	Arriving at the destination within the expected time									VI**							VI		VI**				
5	Driving in lower traffic volume									VI***											VI**		
6	More direct highways/links for better access to & from the destination									VI**				VI**									
7	Congestion information through various media during journey									VI**													
8	Usage of familiar routes in road segments																						VI**
9	Low levels of road construction to improve traffic movement								L										VI				
10	Cheap travel costs																						
11	Discounted price on highway fares																						
12	Driving in good weather conditions									VI**								VI**					
13	Consistency of travel time to the destination									VI										VI**	VI**	VI	
14	Quality of road surface									VI**											VI**	VI	
15	More than two lanes on roadway to facilitate car movement								M	VI***				VI									
16	Physically divided roadway to support car movement in dangerous areas								M	VI**				VI							VI	VI**	VI
17	Optimizing roadway width to ease congestion									VI				VI**							VI		
18	Visible signage during the journey									VI**				VI**							VI		VI**
19	Appropriate traffic signal settings									VI											VI		VI**
20	Flat , straight roadways											VI									VI		VI**
21	Easily available parking facilities at rest stops									VI**					VI						VI**	VI**	VI**
22	Experiencing beautiful natural and urban landscapes along the route												VI**								VI	VI	VI**
23	Comfortable rest areas, attractions and related services along the route																				VI**		VI**

Note: 1 – gender (Male, Female) 2 – age (Young, Old), 3 – education (Non graduate, Graduate), 4 – household income (Low, High), 5 – household size (Low, More), 6 – car ownership (No, Yes), 7 – driving experience (Less, Experienced) 8 – total annual tourism trips (Less, More), 9 – ‘driving a car is an important thing in my life’ (Less Important, Very Important), 10 – ‘driving a car means independence (Less Important, Very Important), 11 – ‘driving a car is a part of growing up’ (Less Important, Very Important), 12 – ‘I can afford the responsibility of owning a car (Less Important, Very Important)’, 13 – ‘I feel lost without a car’ (Less Important, Very Important), 14 – ‘driving a car entails some risk to lives (Less Important, Very Important)’, 15 – ‘driving cars is bad for the environment, (Less Important, Very Important)’, 16 – ‘it is important to drive an energy-efficient car’ (Less Important, Very Important), 17 – ‘having fun talking with passengers’ (Less Important, Very Important), 18 – ‘enjoy listening to music etc. on the radio (Less Important, Very Important), 19 – the feeling that is experienced after driving (Less Important, Very Important), 20 – practicality in relation to journey considerations (Less Important, Very Important), 21 – takes risks in driving style (Less Important, Very Important), 22 – ‘driving a car means doing well in life’ (Less Important, Very Important). Significant value $P < 0.05$ **, $P < 0.001$ ***

Table 3 Results of Mann-Whitney analysis on 'en route to/from the destination' road segment

En route to/from the destination		CO & DE										ATC				DP							
Driving satisfaction items		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Drive at preferred speed on leisure trip									VI**				VI									VI**
2	Reduce driving speed or stop less frequently										VI**			VI**					VI**				
3	Speed while driving																VI**						
4	Arriving at the destination within the expected time									VI***								VI**					
5	Driving in lower traffic volume									VI**									VI***				
6	More direct highways/links for better access to & from the destination									VI**										VI**			
7	Congestion information through various media during journey									VI**									VI***				VI
8	Usage of familiar routes in road segments									VI***				VI**				VI**	VI***		VI	VI	VI
9	Low levels of road construction to improve traffic movement									VI***				VI**									VI***
10	Cheap travel costs									VI**							VI		VI				
11	Discounted price on highway fares									VI		VI**											VI
12	Driving in good weather conditions									VI**													VI**
13	Consistency of travel time to the destination									VI**				VI			VI**						VI
14	Quality of road surface									VI**							VI**		VI		VI**	VI	VI**
15	More than two lanes on roadway to facilitate car movement									VI**									VI**				
16	Physically divided roadway to support car movement in dangerous areas									VI**				VI**							VI	VI**	VI**
17	Optimizing roadway width to ease congestion																		VI**				
18	Visible signage during the journey													VI**									VI
19	Appropriate traffic signal settings																		VI**				
20	Flat , straight roadways									VI**		VI**							VI**				
21	Easily available parking facilities at rest stops																				VI**	VI	VI**
22	Experiencing beautiful natural and urban landscapes along the route							L													VI	VI	VI
23	Comfortable rest areas, attractions and related services along the route																		VI**				VI**

Note: Explanations are same as Table 2.

Table 4 Results of Mann-Whitney analysis on 'within the destination' road segment

within the destination		CO & DE										DC				ATC				DP			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Drive at preferred speed on leisure trip										VI**		VI								VI***		
2	Reduce driving speed or stop less frequently										VI**		VI**							VI**	VI**		
3	Speed while driving																						
4	Arriving at the destination within the expected time	Y							VI**								VI						VI**
5	Driving in lower traffic volume																			VI			
6	More direct highways/links for better access to & from the destination																						
7	Congestion information through various media during journey											VI**											VI
8	Usage of familiar routes in road segments																	VI**					VI**
9	Low levels of road construction to improve traffic movement								VI**														VI
10	Cheap travel costs	Y									VI**			VI**			VI		VI**				
11	Discounted price on highway fares										VI**	VI**		VI***				VI				VI	VI**
12	Driving in good weather conditions								VI**														VI**
13	Consistency of travel time to the destination					M			VI***														
14	Quality of road surface								VI**														
15	More than two lanes on roadway to facilitate car movement									VI**							VI						VI
16	Physically divided roadway to support car movement in dangerous areas											VI	VI**					VI**					VI
17	Optimizing roadway width to ease congestion							L				VI											VI**
18	Visible signage during the journey								VI**				VI**										VI**
19	Appropriate traffic signal settings																						
20	Flat , straight roadways										VI**									VI			VI**
21	Easily available parking facilities at rest stops																						VI**
22	Experiencing beautiful natural and urban landscapes along the route																						VI**
23	Comfortable rest areas, attractions and related services along the route															VI			VI				VI**

Note: Explanations are same as Table 2.