

## ACCESSIBILITY BARRIERS IN THE SECOND-TIER TOURISM CITIES OF THAILAND FOR PEOPLE WITH VISUAL IMPAIRMENTS

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**Abstract:** This research in tourism of people with visual impairments who travel regularly in the Second-Tier Tourism Cities of Thailand used purposive sampling to study 1) behavior; 2) accessibility barriers; and 3) attraction factors. Interviews with 8 people and questionnaires with 40 people. The results found that different behavior, but similarity of vision levels had similarities results in opinions and problems. The highest score is attraction (= 4.60), followed by accessibility (= 4.50), accommodation (= 4.48), activity (= 4.48), and amenities (= 4.41). Opinions differed between groups at a statistically significant level of .05 in 4 questions. The public transportation system in Thailand especially in the second-tier cities is still unable to meet the needs of the visually impaired. They are lacking suitable and accommodating facilities. There is also lack of facilities for the disabled at the tourist attraction, especially, in the second-tier cities in Thailand.

**Key words:** Accessible Barriers, Visual Impairment, Tourism, Second Tier Cities, Accessible Technology

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### INTRODUCTION

Tourism is an activity that is very important to all groups in society that in addition to creating happiness and experiences for those who travel also generates income for tourist attractions and local people. The availability of facilities and services attracts and accommodate all groups of tourists therefore various agencies and related parties must be given priority (Chatchakul, 2014). Tourism is an integral part of human quality of life. In many countries there is a policy to encourage all citizens to have the opportunity to travel including people with disabilities (Ounvijit et al., 2014). Farkas et al. (2020) revealed that the top five reasons why people do not travel were lack of money, followed by lack of time, lack of language skills, lack of company, and health condition. The main limitations on rural tourism growth are local government corruption and mismanagement issues resulting in poor basic services and critical infrastructure maintenance, particularly power supplies, water and roads (Giddy et al., 2022). In Thailand, tourism, and recreation for people with disabilities are still of little interest to people with disabilities themselves and agencies that support people with disabilities because all parties still see that the factors used in daily life, daily activities, such as fundamental needs and career promotion as more. Siriwong and Sengdaeng (2011) said that tourists with physical limitations such as disabled, elderly, want to travel but face problems and obstacles in information for planning travel so needs the establishment to recognizes their importance and provide facilities for them in terms of information for tourism planning.

Establishment of a transportation service system that is favorable for people with disabilities, hotel accommodation, including providing services that meet the needs of such people in a systematic and comprehensive manner would make them interested in travelling, including people with disabilities from foreign countries. Gonda (2021) stated that 10% of the population of Europe are affected by the issue of accessible tourism, and therefore this segment is significant for its market value as well as societally and socially. With regard to equal access to services and appropriate tourism supply development it is essential to understand stakeholder expectations and their habits as consumers.

The Thai population in 2022 consists of 66,171,439 people which is 0.91% of the total world population (Ratchakitcha, 2021). The Department of Promotion and Development of Disabled Persons reported on 31 December 2021 that 2,102,384 Disabled Persons in Thailand have an Identification Card, or approximately 3.81% of the population. The greatest percentage of disabled people in Thailand have mobility impairment (50.17%), followed by hearing impairment (18.69%) and visual impairment (8.92%). The percentage of people with disabilities is getting higher. More than 1.1 million people with disabilities are elderly people aged 60 years and over because Thailand is an aging society affecting physical disabilities (Department of Promotion and Development of Disabled Persons, 2017). All people with disabilities are eligible to access their rights without discrimination as prescribed laws and policies which provide for human rights and community participation to enhance the quality of life for people with a disability in Thailand since 1997 and 2005. The

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present interim constitution in 2014 provides all with human rights and dignity. The Thai government allows more budget allocation. However, there is a lack of representatives and implementation of plans and rehabilitation services for disabled people (Cheausuwantavee, 2015). The number of complaint cases have increased including education issues, health issues, accessing information issues, and travelling issues. Sawangkong and Siriwong (2017) found that there are various problems for visually impaired people in traveling, especially in the second-tier cities in Thailand. Firstly, transportation issues are very important. Secondly, there are lack of suitable and accommodating facilities. Thirdly, there is a lack of staff knowledge and understanding in caring for visually impaired people. Fourthly, there are some problems happening with visually impaired people at restaurants. Fifthly, there are lack of facilities for disabled people at tourist attractions, especially, in the second-tier cities in Thailand. Finally, the negative attitude towards disabled travelers is seen by most staff as a burden that takes longer to supervise and explain information. This paper focuses on tourism of people with visual impairments who travel regularly in the Second-Tier Tourism Cities of Thailand: 1) their behavior; 2) accessibility barriers; and 3) attraction factors. The results of this research may help enhance visually impaired people travelling in the Second-Tier Tourism Cities of Thailand.

### **Research Objectives**

1. To study the tourism behaviour of the visually impaired people in the Second-Tier Tourism Cities of Thailand;
2. To examine barriers in accessible tourism of people with visual impairments in the Second-Tier Tourism Cities of Thailand;
3. To study attraction factors in tourism of people with visual impairments in the Second-Tier Tourism Cities of Thailand

## **LITERATURE REVIEW**

### **Information about Visual Impairment**

**A. Definition of Visual Impairment:** The Individuals with Disabilities Education Act (IDEA) (2022) defines the term of visual impairment as “impairment in vision that, even with correction, adversely affects a child’s educational performance. The term includes both partial sight and blindness.”

**B. Level of Visual Impairment:** Duffy (2015) reveals that the term "Visual impairment" generally describes the visual function range, from total blindness to low vision. Visual Impairment levels are defined by The World Health Organization as: Snellen visual acuity 20/70 to 20/160: Moderate Visual Impairment; Snellen visual acuity = 20/200 to 20/400 or visual field of 20 degrees or less: Severe Visual Impairment; Snellen visual acuity = 20/500 to 20/1000 or visual field of 10 degrees or less : Profound Visual Impairment; Light Perception and Light Projection: A person with severe visual impairment may notice light and dark, or where light comes from ;Total blindness means no light perception (NLP)

### **Accessible Tourism**

Darcy and Dickson (2009) describe Accessible Tourism as traveling by increasing the need for accessibility in various dimensions such as movement, vision, hearing, and perception to provide individuals with equality and equal dignity through products, services and environments designed for all (Universal Design). This definition includes those traveling with a child in a wheelchair, elderly and disabled.

### **Accessibility and Useability Guideline**

The concept of usability, accessibility and user experience (UX) was discussed by Petrie and Bevan (2014) as a way to evaluate a system by developers. They mentioned that there was a lack of agreement about whether accessibility means usability or universal design for disabled and elderly people among the definitions from Web Accessibility Initiative WAI, ISO usability and accessibility, and World Wide Web Consortium (W3C). Their discussion also mentioned about UX which will be more and more important as it is a person’s responses and perceptions that result from the use of produce, system or service. They also discussed t UX evaluations in a design process under headings: experts, automatic checks, users, usage data, and model and simulation. In addition, there are extensive guidelines for accessibility and usability concerned about the interactions between people and technology: Shneiderman’s 8 golden rules, Nielsen’s usability heuristics, WCAG 2.0 etc. However, these guidelines do not consider the interactions between people and people or people and objects. Universal Design has seven principles: flexibility in use, equitable use, perceptible information, simple and intuitive use, low physical effort, tolerance for error, size and space for approach and use (Mace, 1985). It helps decrease discrimination in the society. Although, there is not every accessible design considered as universal design such as a control panel with large membrane switches may not be suitable for blind people but may be suitable for people with limited manual dexterity (Story, 1998).

### **Related work**

There are not many research studies that focus on accessible tourism for visually impaired people in the second-tier cities of Thailand. Sawangkong and Siriwong (2017) found that issues in traveling for the visually impaired can be divided into the following areas: First, a lack of amenities such as audio equipment or application to tell where the public transportation is now and where are the extra seats for the visually impaired people. They should be seated near the ascent or near the driver for the convenience of getting in and out of the vehicles and route inquiry. Second, there are lack of suitable and accommodating facilities. The needs of the visually impaired, such as braille sound equipment in elevator corridors. For the visually impaired people, they cannot find things in the room; forgetting where to put the key; cannot find

thing by themselves so they need to call staff for help, etc. Third, there is a lack of staff knowledge and understanding in caring for visually impaired people. Most of the employees have never attended training in caring for people with disabilities. Forth, there are some problems happening with visually impaired people at restaurants. In a case of A La Carte: The visually impaired people need staff to read the menu to hear what's included and many times they had to ask the staff to read the menu again. For a Chinese Table: The problem encountered is not knowing where the food is placed, causing the visually impaired to ask other people all the time, including when turning or switching food from the original point. It makes visually impaired people not know the location and not dare to scoop food often. For a case of a buffet, the visually impaired must rely on others to navigate to the Line Buffet and explain what food is served before taking it back to eat, which makes visually impaired people feel afraid that they may have to bother others many times.

Fifth, there are lack of facilities for the disabled at the tourist attractions, especially, in the second-tier cities in Thailand such as guideposts or braille maps of walkways for the visually impaired people, alarm sounds at various points to enable visually impaired people to travel on their own without disturbing others. Finally, the negative attitude towards disabled travelers who are seen by most staff as a burden who take longer to supervise and explain information. Many times, the help is wrong and creates other problems for visually impaired people. Small et al. (2007) revealed that the majority access issues for visually impairment include clear edging steps, suitable lighting, good color contrast of surfaces, clear signage, and good contrast handrails. Visually impaired people also had problems in accessing information. They had difficulties reading travel information signs, screens, and holiday publicity. Therefore, planning a holiday trip with visually impairment takes more time and consideration. RNIN (2009) stated that according to the Disability Discrimination Acts of 1995 and 2005, taking a holiday in the UK has become easier, whereas travelling in oversea destinations still have challenging issues. Sawangsuk (2017) conducted research on tourism management for tourists with mobility disabilities and found there should be service areas in tourist attractions especially for disabled people, such as dining areas, area for tourism activities, etc. while tourism should be organized for tourists with mobility disabilities regarding the process of environmental education, the tourism business, travel marketing tourism, tourism participation of local communities and tourism consciousness. Khiaopraphasorn and Sawangsuk (2020) conducted research on the development of tourism personnel for tourists with mobility disabilities. Gonda (2021) found that the main difficulties travelling faced by 89 people with disabilities in Hungary are communication difficulties (2%), difficulties when doing sports (15%), difficulty in finding tourist attractions (12%), difficulties in accommodation (18%), difficulties in the catering industry (20%), and transport difficulties (30%). No everyday life difficulties were encountered by only 4% of respondents.

Similar results were found by the other four partners, with most responses being transport difficulties. Followed by finding attractions, accommodation and catering industry. Suksutdhi (2022) stated that small hotels in Nakhon Rachasima, Thailand should implement the use of self-service technology (SST) which should realize the efficient connection of SST, i.e. the signal should be stable and not slow and perceived usefulness and ease of use which could reduce time and transaction. From the information above it can be concluded that people with disability still lack accessible amenities. There are a lack of suitable and accommodating facilities and also a lack of staff knowledge and understanding in caring for visually impaired people. There are some problems happening with visually impaired people in various situations especially, in the second-tier cities in Thailand. The negative attitude towards disabled travelers is seen with most staff. Therefore, it is necessary to study visually impaired people's behavior in travelling and their accessibility barriers in order to know their information that could help entrepreneurs to improve their businesses. After knowing the information then the entrepreneurs could plan to improve attraction factors to satisfy people with disabilities.

**MATERIALS AND METHODS**

This research aims to: 1) study behavior of those with visual impairments who travel regularly in the Second-Tier Tourism Cities of Thailand; 2) study their accessibility barriers; and 3) evaluate attraction factors for those with visual impairments. This research used a mixed method research approach consisting of qualitative and quantitative methods. The triangulation technique was used to confirm results. For objectives 1 and 2 data were collected from literature reviews and interviews with 8 visually impaired people who had been travelling in the Second-Tier Tourism Cities in Thailand. For objective 3, forty visually impaired people who had been travelling in the Second-Tier Tourism Cities in Thailand were asked to answer a questionnaire. The questionnaire was divided into four sections and validated by three experts and tested with 30 participants. The rating scale was calculated to determine the confidence of the reliability using the alpha coefficient analysis method and showed a value of .814.

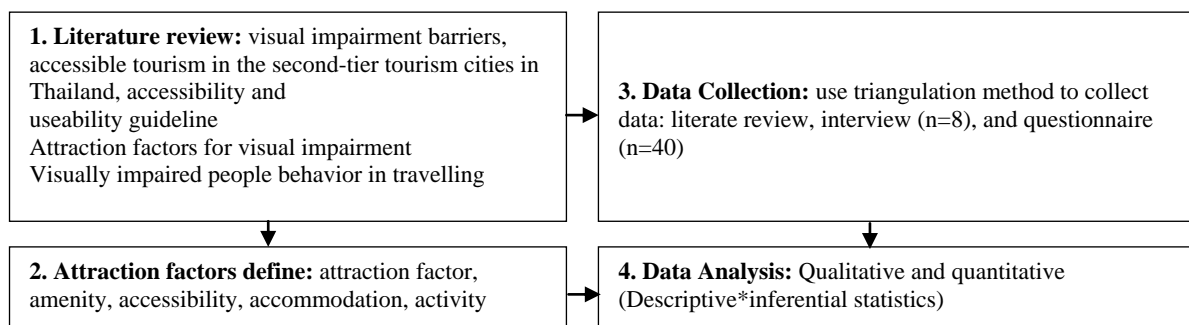


Figure. 1 Research Methodology Steps

**Statistics used in data analysis**

The calculation of the personal status of the respondents from the questionnaire part 1 with a check list style was used to find the frequency and summarized as a percentage for the calculation of data on tourism behavior of visually impaired people in the secondary tier cities of Thailand. The questionnaire part 2 has a check list style, summarized as percentages, which addressed objective 1. An analysis of the relationship between the tourism behavior of visually impaired people in the secondary tier cities of Thailand and their personal status in terms of gender, age, level of vision, and education level used Chi Square value with Pearson's method to analyze the correlation of variables calculating information on travel problems and barriers for visually impaired people in the secondary tier cities of Thailand. From the questionnaire part 3 that has a check list style, the frequency method was used and summarized as percentages, which answered objective 2.

An analysis of the relationship between problems and barriers in tourism of visually impaired people in the secondary tier cities of Thailand and their personal status in terms of gender, age, level of vision, and the educational level used the Chi Square value with Pearson's method to analyze the correlation of the variables which addressed objective 2. An analysis of visually impaired people's opinions in the secondary tier cities of Thailand from the questionnaire part 4 using the rating scale, mean and S.D. values for addressing objective 3. A comparison of opinions of visually impaired people in the secondary tier cities of Thailand classified by personal status in terms of gender, age, level of vision and education level used differential analysis with t-test for gender status. one-way analysis of variance (ANOVA) was used to analyze individual variable differences for ages, level of visions, and educational levels. The group differences were analyzed and compared by pairs using Scheffe Analysis, which addressed the objective 3 calculating information on the opinions and other suggestions of people with visual impairment in tourism in the second-tier cities of Thailand. From the open-ended questionnaire part 5, the content analysis method was used and the frequency was summarized and sorted in descending order.

**RESULTS**

**Participant's profile**

There were forty participants who participated in answering questionnaire questions. They were more male (65%) than female (35%). Most were in the age range of 20-30 years old (62.50%), followed by 31-40 years old (17.50%), and 51-60 years old (5%). Most had low vision (32.50%), followed by blindness (42.50%) and mild vision (5%) and moderate vision (5%). Most had a bachelor's degree (70%), followed by secondary school (27.50%), and primary school (2.50%).

**1. Research Question 1: What are tourism behaviors of the visually impaired in the Second-Tier Tourism Cities of Thailand? The results are shown in Figures 2 – 8.**

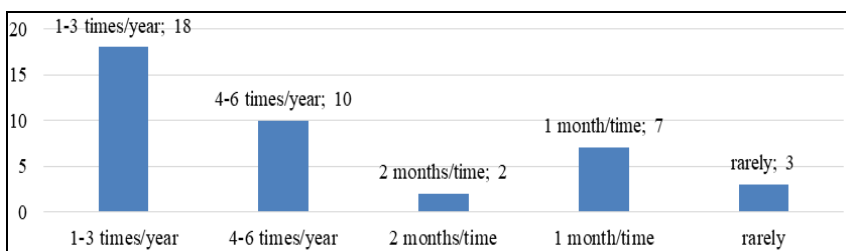


Figure 2. How often do you travel?

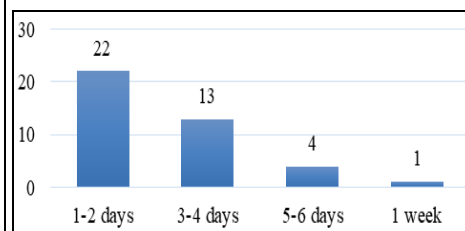


Figure 3. How long do you spend time in traveling?

From Figure 2, most participants traveled 1-3 times/year (45%), followed by traveled 4-6 times/year (25%), and the least they rarely traveled in the Second-Tier Tourism Cities of Thailand (5%). From Figure 3, most participants had spent their time in travelling 1-2 days per time (55%), followed by 3-4 days per time (32.50%), and the least they had spent a week in travelling in the Second-Tier Tourism Cities of Thailand (2.50%).

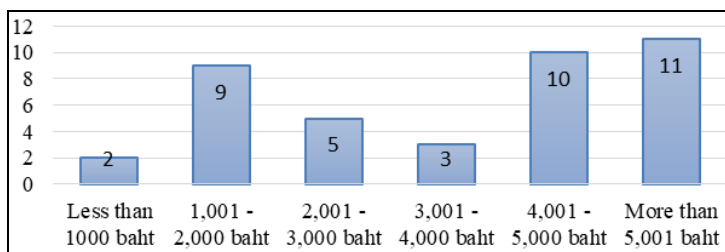


Figure 4. Travel expenses per trip

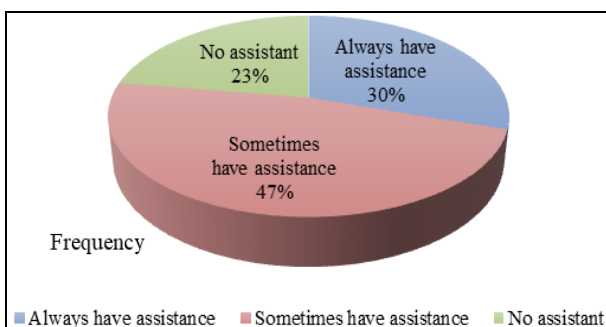


Figure 5. Do you have a travel assistant for most of your travels?

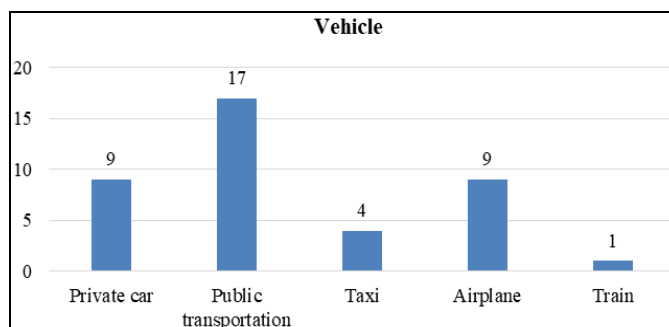


Figure 6. What type of vehicle do you use most for your travels?

From Figure 4, most participants had spent more than 5,001 baht (27.50%), followed by 4,001 - 5,000 baht (25.00%), and the least less than 1000 baht in travelling in the Second-Tier Tourism Cities of Thailand (5.00%).

From Figure 5, most participants sometimes have assistance in travelling (47%), followed by always have assistance (30%), and the least no need assistant in travelling (22.50%). From Figure 6, most participants sometimes travelled by public transportation (42.50%), followed by airplane and private car and airplane (22.50%), and the least no need for assistant in travelling. From Table 7, most participants sometimes used the app to make room reservations (40.63%), followed by asking someone else to book the accommodation (34.38%), and the least booked by walking into the accommodation (1.56%). From Figure 8, most participants sometimes had experience in booking through Traveloka (49%), followed by Agoda (29%), and the least had no experience in using the application (5%).

**2. Research Question 2:** What are barriers in accessible tourism of people with visual impairments in the Second-Tier Tourism Cities of Thailand?

Most visually impaired people have problems accessing buttons in a travel booking application (22.40%), followed by problems with the lack of image descriptions (18.40%), problems scrolling arrows to book a room (12.80%), problems accessing data links and the system payment pending issue cannot be processed (11.20%), Payment issues accessing data in form (9.60%), Login problem by asking about the images seen (8.00%), and the least is data sorting problem (6.40%). There were eight visual impaired people who took part in the experiment: 2 with moderate visual impairment, 2 with severe visual impairment, 2 profound visual impairment, and 2 with blindness.

They were selected by those having experiences in travelling in the Second-Tier Tourism Cities of Thailand. The participants were asked to do the experiment on booking airplane flight from the three platforms: Air Asia, Lion Air and Traveloka. They also were asked to do the experiment on booking accommodation from three platforms: Agoda, Booking.com and Traveloka. The results found that all participants agreed platform Traveloka is the easiest platform for booking the airline flight through mobile application (all participants mentioned). However, Air Asia and Lion Air had some problems in accessing button, scrolling arrows to book a room, and payment method while using the accessibility function on IOS and Android platforms. When tried on web browser, it is easier for booking and payment processes (moderate visual impairment mentioned). For accommodation booking, they found that Booking.com and Traveloka are easier for them to booking the accommodation. Agoda had some problems in booking by jumping the information order especially when using a frame in designing the application (moderate visual impairment mentioned).

Sometimes, it needed double taps then the tab will move to next tab and give a problem in accessing data links. It was found it is difficult to navigate (blindness mentioned). Moreover, all participants agreed on login problems by asking about the images seen. This issue needs to be solved as soon as possible.

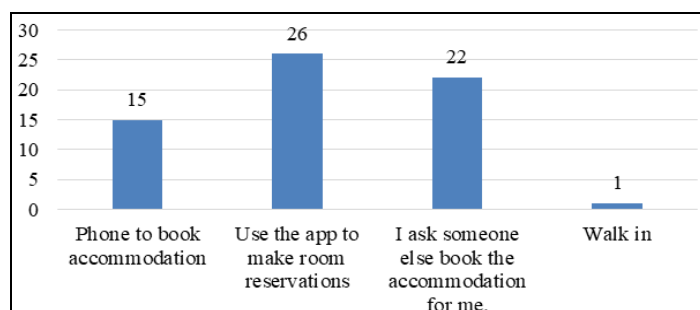


Figure 7. What channels do you mostly use to book accommodation?

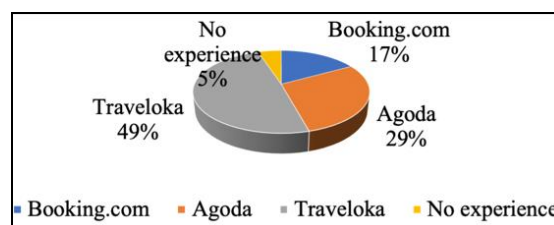


Figure 8. What apps do you have experience with booking?

**3. Research Question 3:** What are attraction factors in tourism of people with visual impairments in the Second-Tier Tourism Cities of Thailand?

Forty participants were asked to rate the tourism factors of people with visual impairments in the Second-Tier Tourism Cities of Thailand. The participants used 5-point Likert rating scales of 1 (very poor) to 5 (very good) in answering a questionnaire about perception on tourism in the Second-Tier Tourism Cities of Thailand of people with visual impairment. From Table 1, the overall average score for attraction tourism in all aspects is 4.60. Most participants often decide to travel to a particular place because of attraction e.g., good atmosphere, good food (  $\bar{X}$  = 4.78).

The second requirement is participants will talk about tourist attractions that provide good facilities to other people with disabilities (  $\bar{X}$  = 4.73). The least are participants always travel in places that have not been before and participants travel in places that provide new knowledge with accessibility (  $\bar{X}$  = 4.45).

Table 1 The average score for attraction factor

Attraction	Mean	Std. Deviation
1.You always travel in places that have not been before.	4.45	.677
2.You travel in places that provide new knowledge with accessibility.	4.45	.749
3.You will talk about tourist attractions that provide good facilities to other people with disabilities.	4.73	.452
4.You will tell other people with disabilities about tourist attractions that don't have good facilities.	4.57	.636
5.You often decide to travel to a particular place because of his attraction e.g., good atmosphere, good food.	4.78	.423
<b>Average</b>	<b>4.60</b>	<b>0.587</b>

From Table 2, the overall average score for amenity in all aspects is 4.41. Most participants told others about accommodation, restaurants, transportation, and tourism services that facilitate tourism to others ( $\bar{X} = 4.68$ ). The second requirement is the participants travel to places with restaurants near tourist attractions ( $\bar{X} = 4.57$ ). The least is participants use the tourist information service from the public relations point at the tourist attraction ( $\bar{X} = 4.12$ ). From Table 3, the overall average score for accessibility in all aspects is 4.50. Most participants always study the routes and methods of travel well before leaving home ( $\bar{X} = 4.80$ ). The second requirement is the participants travel in a place where transportation is convenient for visually impaired people ( $\bar{X} = 4.60$ ). The least is participants always have a personal assistant on travels ( $\bar{X} = 4.05$ ).

From Table 4, The overall average score for accommodation in all aspects is 4.48. Most participants compare accommodation services and prices from multiple sources before making a booking decision ( $\bar{X} = 4.72$ ). The second requirement is the participants choose accommodation with elevator access to the floor of the property ( $\bar{X} = 4.60$ ). The least is before booking accommodation, participants will be asked how to assist the visually impaired people ( $\bar{X} = 4.30$ ).

Table 2. The average score for amenity

<b>Amenities</b>	<b>Mean</b>	<b>Std. Deviation</b>
1.You travel to places that have facilities that accommodate visually impaired people while traveling.	4.45	.749
2.You travel to places with restaurants near tourist attractions.	4.57	.675
3.You travel to places with hospitals near tourist attractions.	4.25	.840
4.You use the tourist information service from the public relations point at the tourist attraction.	4.12	.853
5.You told others about accommodation, restaurants, transportation, and tourism services that facilitate tourism to others.	4.68	.572
<b>Average</b>	<b>4.41</b>	<b>.738</b>

Table 3. The average score for accessibility

<b>Accessibility</b>	<b>Mean</b>	<b>Std. Deviation</b>
1.You always study the routes and methods of travel well before leaving home.	4.80	.405
2.You always have a personal assistant on your travels.	4.05	.986
3.You travel in a place where transportation is convenient for visually impaired people.	4.60	.545
4.You use a vehicle that has staffs to serve you while traveling.	4.47	.716
5.You travel in a place where bookings are easily accessible.	4.57	.549
<b>Average</b>	<b>4.50</b>	<b>.640</b>

Table 4. The average score for accommodation

<b>Accommodation</b>	<b>Mean</b>	<b>Std. Deviation</b>
1.You can find information on accommodation services that cater to the visually impaired before booking.	4.43	.781
2.Before booking your accommodation, you will be asked how to assist the visually impaired people.	4.30	.883
3.You compare accommodation services and prices from multiple sources before making a booking decision.	4.72	.506
4.You choose accommodation with elevator access to the floor of the property.	4.60	.672
5.You choose accommodation with bathroom for the visually impaired.	4.37	.807
<b>Average</b>	<b>4.48</b>	<b>.730</b>

Table 5. The average score for activity

<b>Activity factors</b>	<b>Mean</b>	<b>Std. Deviation</b>
1.You search for information about activities that are available for visually impaired people in tourist attractions before deciding to travel.	4.57	.675
2.You are concerned with activities that visually impaired people could do.	4.40	.778
3.You consider safe activities that visually impaired people can do.	4.50	.751
4.The tourist destination offers a wide variety of sports activities.	4.37	.807
5.Tourist attractions are organized with interesting and attractive tourist activities.	4.50	.751
<b>Average</b>	<b>4.47</b>	<b>.752</b>

Table 6 The results of comparison of opinion differences between different age groups

		Sum of Squares	df	Mean Square	F	Sig.
1. He often decides to travel to a particular place because of his attraction e.g., good atmosphere, good food.	Between Groups	1.425	3	.475	3.080	.040
	Within Groups	5.550	36	.154		
	Total	6.975	39			
2. You travel to places with restaurants near tourist attractions.	Between Groups	4.325	3	1.442	3.858	.017
	Within Groups	13.450	36	.374		
	Total	17.775	39			
3. You use the tourist information service from the public relations point at the tourist attraction.	Between Groups	8.018	3	2.673	4.726	.007
	Within Groups	20.357	36	.565		
	Total	28.375	39			
4. You travel in a place where bookings are easily accessible.	Between Groups	2.586	3	.862	3.378	.029
	Within Groups	9.189	36	.255		
	Total	11.775	39			

From Table 5, The overall average score for activity in all aspects is 4.47. Most participants search for information about activities that are available for visually impaired people in tourist attractions before deciding to travel ( $\bar{X} = 4.57$ ). The second requirement is the participants consider safe activities that visually impaired people can do, and tourist attractions are organized with interesting and attractive tourist activities ( $\bar{X} = 4.50$ ).

The least is tourist destination offers a wide variety of sports activities ( $\bar{X}= 4.37$ ). The results of the calculation were compared to find the relationship between the variables using Pearson Chi-square found that there are only three relations among the Chi-Square tests that are significantly differences at the level of .01. The three relationships were 1) The relationship between travel period and education has significantly difference at a level of .01.; 2) The relationship between travel assistant and level of vision has significantly difference at a level of .01.; and 3) The relationship between type of vehicle and level of vision has significantly difference at a level of .01. From Table 6, The results of comparison of opinion differences between different age groups by ANOVA found that opinions on tourism factors of visually impaired people differed between groups at a statistically significant level of .05 in 4 questions: 1); 2); 3) and 4).

### 1) Attraction

From Table 7, the results of comparison of opinion differences between different level of visions groups by ANOVA found that opinions on attraction factors of visually impaired people differed between groups at a statistically significant level of .01 in 5 questions. The results of pairwise comparisons between in attraction factors using measure amount for three levels of vision. There was a significant difference at .01 level of measure amount for question 1, between low vision and moderate vision, low vision and blindness, mild vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 2. There was a significant difference at .01 level of measure amount for question 3 between low vision and blindness, moderate vision and blindness. There was a significant difference at .05 level of measure amount for question 4 between low vision and blindness, mild vision and moderate vision, and moderate vision and blindness. There was a significant difference at .05 level of measure amount for question 5 between mild vision and blindness.

Table 7 The results of comparison of opinion differences between different level of visions groups in term of attraction by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. You always travel in places that have not been before.	Between Groups	11.931	3	3.977	23.985	.000
	Within Groups	5.969	36	.166		
	Total	17.900	39			
2. You travel in places that provide new knowledge with accessibility.	Between Groups	10.208	3	3.403	10.476	.000
	Within Groups	11.692	36	.325		
	Total	21.900	39			
3. You will talk about tourist attractions that provide good facilities to other people with disabilities.	Between Groups	2.744	3	.915	6.296	.002
	Within Groups	5.231	36	.145		
	Total	7.975	39			
4. You will tell other people with disabilities about tourist attractions that don't have good facilities.	Between Groups	7.867	3	2.622	11.939	.000
	Within Groups	7.908	36	.220		
	Total	15.775	39			
5. You often decide to travel to a particular place because of his attraction e.g., good atmosphere, good food.	Between Groups	1.898	3	.633	4.486	.009
	Within Groups	5.077	36	.141		
	Total	6.975	39			

Table 8. The results of comparison of opinion differences between different level of visions groups in term of amenities by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. You travel to places that have facilities that accommodate visually impaired people while traveling	Between Groups	9.100	3	3.033	8.531	.000
	Within Groups	12.800	36	.356		
	Total	21.900	39			
2. You travel to places with restaurants near tourist attractions.	Between Groups	5.467	3	1.822	5.331	.004
	Within Groups	12.308	36	.342		
	Total	17.775	39			
3. You travel to places with hospitals near tourist attractions.	Between Groups	17.531	3	5.844	21.102	.000
	Within Groups	9.969	36	.277		
	Total	27.500	39			
4. You use the tourist information service from the public relations point at the tourist attraction.	Between Groups	20.357	3	6.786	30.466	.000
	Within Groups	8.018	36	.223		
	Total	28.375	39			
5. You told others about accessible accommodation, restaurants, transportation, and tourism services that facilitate tourism to others.	Between Groups	3.298	3	1.099	4.176	.012
	Within Groups	9.477	36	.263		
	Total	12.775	39			

### 2) Amenities

From Table 8, the results of comparison of opinion differences between different age groups by ANOVA found that opinions on amenity factors of visually impaired people differed between groups at a statistically significant level of .01 in 5 questions. The results of pairwise comparisons between amenity factors using measure amount for three levels of vision. There was a significant difference at .05 level of measure amount for question 1 between low vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 2 between low vision and blindness. There was a significant difference at .01 level of measure amount for question 3 between low vision and blindness, mild vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 4 between low vision and blindness, mild vision and blindness, and moderate vision and blindness. There was a significant difference at .05 level of measure amount for question 5 between low vision and blindness.

### 3) Accessibility

From Table 9, the results of comparison of differences in opinions between different levels of perception by ANOVA revealed that opinions on accessibility factors of visually impaired people differed between groups at a statistically significant level of .05 for 5 questions. The results of pairwise comparisons between in accessibility factors using measure amount for three levels of vision. There was no significant difference of measure amount for question 1 between levels of vision. There was a significant difference at .01 level of measure amount for question 2 between low vision and blindness, mild vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 3 between mild vision and blindness. There was a significant difference at .01 level of measure amount for question 4 between low vision and blindness. There was a significant difference at .01 level of measure amount for question 5 between low vision and blindness.

Table 9. The results of comparison of opinion differences between different level of visions groups in term of accessibility by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. You always study the routes and methods of travel well before leaving home.	Between Groups	1.323	3	.441	3.127	.038
	Within Groups	5.077	36	.141		
	Total	6.400	39			
2. You always have a personal assistant on your travels.	Between Groups	27.192	3	9.064	30.474	.000
	Within Groups	10.708	36	.297		
	Total	37.900	39			
3. You travel in a place where transportation is convenient for visual impaired people.	Between Groups	4.228	3	1.409	6.882	.001
	Within Groups	7.372	36	.205		
	Total	11.600	39			
4. You use a vehicle that has staff to serve you while traveling.	Between Groups	9.883	3	3.294	11.751	.000
	Within Groups	10.092	36	.280		
	Total	19.975	39			
5. You travel in a place where bookings are easily accessible.	Between Groups	5.467	3	1.822	10.401	.000
	Within Groups	6.308	36	.175		
	Total	11.775	39			

### 4) Accommodation

From Table 10, the results of comparison of differences in opinions between different levels of perception by ANOVA revealed that opinions on accommodation factors of visually impaired people differed between groups at a statistically significant level of .01 in 5 questions. The results of pairwise comparisons between in accessibility factors using measure amount for three levels of vision. There was a significant difference at .01 level of measure amount for question 1 between low vision and blindness and mild vision and blindness. There was a significant difference at .05 level of measure amount for question 2 between low vision and blindness, mild vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 3 between mild vision and blindness. There was no significant difference of measure amount for question 4 between levels of vision. There was a significant difference at .01 level of measure amount for question 5 between low vision and blindness, mild vision and blindness, and moderate vision and blindness.

Table 10. The results of comparison of opinion differences between different level of visions groups in term of accessibility by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. You can find information on accommodation services that cater to the visually impaired before booking.	Between Groups	10.883	3	3.628	10.129	.000
	Within Groups	12.892	36	.358		
	Total	23.775	39			
2. Before booking accommodation, you will be asked how to assist the visually impaired.	Between Groups	16.369	3	5.456	14.000	.000
	Within Groups	14.031	36	.390		
	Total	30.400	39			
3. You compare accommodation services and prices from multiple sources before making a booking decision.	Between Groups	2.898	3	.966	4.914	.006
	Within Groups	7.077	36	.197		
	Total	9.975	39			
4. You choose accommodation with elevator access to the floor of the property.	Between Groups	4.923	3	1.641	4.660	.007
	Within Groups	12.677	36	.352		
	Total	17.600	39			
5. You choose accommodation with bathroom for the visually impaired.	Between Groups	12.452	3	4.151	11.563	.000
	Within Groups	12.923	36	.359		
	Total	25.375	39			

From Table 11, the results of comparison of differences in opinions between different levels of perception by ANOVA revealed that opinions on activity factors of visually impaired people differed between groups at a statistically significant level of .01 in 5 questions. The results of pairwise comparisons between in activity factors using measure amount for three levels of vision. There was a significant difference at .05 level of measure amount for question 1 between low vision and mild vision, low vision and blindness, mild vision and moderate vision, moderate vision and blindness. There was a significant difference at .05 level of measure amount for question 2 between low vision and mild vision, low vision and blindness, mild vision and low vision, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 3 between low vision and blindness, and moderate vision and blindness. There was a significant difference at .01 level of measure amount for question 4 between low vision and blindness, and moderate vision



and blindness. There was a significant difference at .01 level of measure amount for question 5 between low vision and blindness, and moderate vision and blindness. The results of comparison of opinion differences between educational levels with ANOVA found that there was a statistically significant difference between the groups at the .05 level opinions about “You will tell other people with disabilities about tourist attractions that don't have good facilities”.

There are 14 lists of comments on visually impairment travelling in the second-tier cities in Thailand. Most participants comment on tourist attractions should train staff to assist visually impaired people in providing travel advice or navigating in tourist places (13.33%), followed by it is difficult for the visually impaired is to use the elevator up and down the hotel building.; I should be good if the elevator had Braille so that visually impaired people could press the elevator freely (10.00%). Finding rooms is also difficult if visually impaired people walk back to the room by themselves (10.00%); and There should be a walkway with braille blocks for the visually impaired people, blind, so that they can travel easily and safely (10.00%). The least are it should have an application to book accommodation that considers the use of the visually impaired more (3.33%); Tourist attractions should be organized in a way that is accessible to all groups of people (3.33%); It should be good if there was a footpath to walk in the tourist area (3.33%); and I would be good to have a good guide to take me to travel in different places or a special group tour for visually impaired people (3.33%).

## 5) Activities

Table 11. The results of comparison of opinion differences between different level of visions groups in term of activities by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. You search for information about activities that are available for visual impaired people in tourist attractions before deciding to travel.	Between Groups	8.852	3	2.951	11.904	.000
	Within Groups	8.923	36	.248		
	Total	17.775	39			
2. You are concerned with activities that visually impaired people could do.	Between Groups	13.292	3	4.431	15.475	.000
	Within Groups	10.308	36	.286		
	Total	23.600	39			
3. You consider safe activities that visually impaired people can do.	Between Groups	10.400	3	3.467	10.759	.000
	Within Groups	11.600	36	.322		
	Total	22.000	39			
4. The tourist destination offers a wide variety of sports activities.	Between Groups	9.942	3	3.314	7.730	.000
	Within Groups	15.433	36	.429		
	Total	25.375	39			
5. Tourist attractions are organized with interesting and attractive tourist activities.	Between Groups	9.077	3	3.026	8.429	.000
	Within Groups	12.923	36	.359		
	Total	22.000	39			

## CONCLUSION AND DISCUSSION

Most visually impaired people had spent 1-2 days per time in travelling, spent more than 5,001 baht per trip, always traveled with assistance, travel by train, use the app to make room reservations, have experience in booking accommodation through Traveloka. Most visually impaired people have problems accessing buttons in a travel booking application, followed by problems with the lack of image descriptions, problems scrolling arrows to book a room, problems accessing data links and the system payment pending issue cannot be processed, payment issues accessing data in form, login problem by asking about the images seen, and the least is data sorting problem. Most visually impaired people both from interviewing and asking questionnaire method have similar problems: accessing buttons in a travel booking application, followed by problems with the lack of image descriptions, problems scrolling arrows to book a room, problems accessing data links and the system payment pending issue cannot be processed, payment issues accessing data in form, login problem by asking about the images seen, and the least is data sorting problem. These problems could be solved by designing the application follows the concept of usability, accessibility, and UX. However, Petrie and Bevan (2014) stated that there was a lack of agreement about whether accessibility means usability or universal design for disabled and elderly people among the definitions from Web Accessibility Initiative WAI, ISO usability and accessibility, and World Wide Web Consortium.

There is a lack of research that focuses on accessible tourism in Thailand, especially, accessible tourism for visually impaired people in the second-tier cities of Thailand. This research also aimed to study the attraction factors in tourism of people with visual impairments in the Second-Tier Tourism Cities of Thailand. The highest score for attraction tourism factors is attraction, followed by accessibility, accommodation, activity, and the least is amenities. The results of comparison of opinion differences between different age groups by ANOVA found that opinions on tourism factors of visually impaired people differed between groups at a statistically significant level of .05 in 4 questions. The results of the comparison of differences in pairs using Post Hoc Tests found that two pairs were statistically significant difference at the .05 level classified by age. The results of comparison of opinion differences between different level of visions groups by ANOVA found that opinions on tourism factors of visually impaired people differed between groups at a statistically significant level of .05 in all 5A of tourism factor questions. The results above associated with Sawangkong and Siritwong (2017); Angkananon and Choibamroong (2022) in term of: 1) the public transportation system in Thailand especially in the second-tier cities is still unable to meet the needs of the visually impaired. 2) They are lacking suitable and accommodating facilities. 3) There is also lack of facilities for the disabled at the tourist attraction, especially, in the second-tier cities in Thailand. The results also associated with Gonda (2021) who found that there were some similar issues in term of the main difficulties being transport, catering industry, accommodation, doing sports, and finding tourist attractions.

Moreover, most participants commented on tourist attractions should train staff to assist visually impaired people in providing travel advice or navigating in tourist places. This related to Khiaopraphasorn and Sawangasuk (2020) stated

that tourism personnel should develop knowledge of their responsibilities to be able to answer questions and can provide services to tourists with disabilities accurately. There also should be skills training in providing services and assistance to tourists with disabilities and developed in terms of personal characteristics. Followed by it is difficult for the visually impaired is to use the elevator up and down the hotel building. The comment on finding rooms is also difficult if visually impaired people walk back to the room by themselves which related to Small et al. (2007) revealed that visually impaired people also had problems in accessing to information. Therefore, planning a holiday trip for visual impairment takes more time and consideration. Other requirements are there should be a walkway with braille blocks for the visually impaired people, blind, so that they can travel easily and safely. Tourist attractions should be organized in a way that is accessible to all groups of people. These are related to Sawangsuk (2017) finding that there should be service areas in tourist attractions especially for disabled people, such as dining areas, area for tourism activities, etc.

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