

Study on Disparities of Chinese and Japanese Passengers' Perceptions on Train Window Scenery

- A Case Study on Enoshima Electric Railway, Japan -

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Train window scenery plays a significant role in passengers' perception during their trips to destinations. This study focused on examining the objects and elements that passengers from China and Japan are attracted by when traveling on Enoshima Electric Railway, utilizing photo projective method to analyze what they focus on and the reason of such choices. The results showed that among the objects focused by passengers, plants and other transportations differs significantly on Chinese and Japanese tourists, while the discrepancy in recalls between Chinese and Japanese passengers mainly centers around their feelings. On the locations of photos, the difference of focus between Chinese and Japanese tourists is mainly in the section that the train runs in the middle of the street. For the reasons of taking photos, Chinese and Japanese passengers show differences on they think the objects are beautiful, interesting, or they just see the objects or have special memories on the objects. Based on the results, suggestions are made for enhancing the attractiveness of sceneries along the line, which is also meaningful for other railway lines connecting sightseeing spots in Japan.

Key Words: *Railway, Tourists, Window Scenery, Enoshima Electric Railway, Photo Projective Method.*

1. INTRODUCTION

1.1 Background

As the pandemic of COVID-19 has come to an end, domestic and international tourism is recovering rapidly. According to Japan Tourism Agency, the spending of domestic tourism in the first quarter of 2023 is increased by 80.6% compare to the first quarter of 2022.¹⁾ The data from JNTO also shows that the amount of inbound tourist in April, 2023 will be the highest number after the reopen of inbound tourism in October 2022.²⁾ Besides, Chinese tourists had a high proportion among all of the inbound tourists before the pandemic of COVID-19. According to the data from JNTO, more than 30% of foreign tourists in 2019 were from mainland China.³⁾ With the release of tourism limitation, the chance for tourism sites to recover has already appeared so it is crucial for tourist cities and towns to know what make the area attractive to the tourists, especially Chinese tourists, and find out the difference between their interests and Japanese tourists' interests to have a better understanding of the charm of local scenery.

Large amount of time during trips are cost due to

transportation. Therefore, the feeling during transportation is crucial to the overall feeling of tourism. As the scenery outside the window of transportation tools As Chinese and Japanese tourists have a large proportion among all of the tourists, it is important to know their interests and ideas about the scenery along the railway lines so that upgrades in order to enhance their trip experience. It is crucial to know the similarities and differences of ideas and interests to the view outside the train between Chinese and Japanese to make future upgrades more effectively and reasonably for tourists from both countries.

1.2 Objectives

This study focuses on the impact of train window scenery on passengers' impressions of the surrounding area and what they associate in their mind during their trips. These are the four goals of this study.

1. To understand what the passengers would look at when they look out of the window of the tram during their trips.
2. To understand the reasons that people make such choices of objects to look at.

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3. To understand what people thinks when they focus on the objects outside the tram.
4. Find the difference of the answers of the 3 questions above between Japanese tourists and Chinese tourists.

2. LITERATURE REVIEW

2.1 Studies on Railway Window Scenery

Goto et al.⁴⁾ researched the billboards in fields along Tokaido Shinkansen. The distribution, size and other conditions of the billboards are researched and the billboards in one section of Tokaido Shinkansen were researched in details as a sample section. Yamagishi⁵⁾ quantified and analyzed the colors of the scenery along Chuo Line and Yamanote Line in Tokyo in 1992 and showed that the difference of colors along these lines showed the vitality of Tokyo. Matsuda⁶⁾ used photo projective method to see what objects outside the city trains people would look at and why they would look at such objects when they were travelling on Tokyo Sakura Tram. The results showed that there was something that many people would look at even though the variety of the scenery along the line and people's choices of objects to look at have a relationship with the traits of the scenery and the speed of the train.

2.2 Studies on Tourists in Japan

Kurata et al.⁷⁾ focused on tourists' photos taken in Asakusa, Tokyo and analyzed the difference between photos taken by eastern people and western people and found the difference of interests between them. Wu⁸⁾ has researched foreign tourists' impression on tourist spots and preference of scenery of them. The research showed that foreign tourists like to take photos on sceneries that could give them the feeling of a giant city. Also, foreign tourists tend to take pictures of views such as anime scenery and traditional shopping streets or temples that could not be found outside Japan.

2.3 Characterization of this Study

Other studies have showed that passengers' impression of the area could be affected by the scenery outside the train windows. Also, there are some objects that many passengers would look at outside the train window. This study focuses on what kind of object or scenery that passengers would look at and the reasons that they look at such objects or sceneries. Also, what comes up within passengers' mind when they look at such

objects and sceneries will be researched.

Besides, current studies on railway window scenery seldom focus on foreigners, no matter they are inbound tourists or residence of Japan. As railway lines are used not only by Japanese but also by foreigners, it is crucial to understand their preference and ideas of train window scenery.

2.4 Definitions of Words

The definitions of words used in this study are shown below.

1) Train Window Scenery

The scenery that could be seen from inside the train when the train is moving or stopped.

2) Targeting Objects

The objects that the subjects in the experiment are looking at.

3) Recalls

The information that comes up with in the subjects' mind when they look at the sceneries outside the train.

3. SELECTION OF EXPERIMENTAL SITE

In order to reach the goal of this study, the line must fulfill all of the conditions below.

- 1) High variety of scenery
- 2) Length not too long
- 3) Close to tourist spots
- 4) Low maximum speed

Considering the four requirements above, Enoshima Electric Railway is selected to be the line that the experiment will be done. Enoshima Electric Railway is a tram line in Kanagawa Prefecture connecting Kamakura Station and Fujisawa station via Enoshima sightseeing area. The line has a high variety of window scenery and a short total length. In addition, the maximum speed is about 50km/h, slow enough for subjects to aim and take pictures of the objects they are interested in. In order to avoid the effects of tiredness on the subjects, the experiment will be done between Kamakura station and Enoshima station as shown in Fig.1. where the length of the trip will be 26 minutes and the variety of the scenery outside the window is high. Also, considering the effect

of crowd on the train, the subjects are asked to focus on the scenery of the window at the left side of the train (the side that can see the ocean).



Fig.1. Experimental Sections ¹⁰⁾

4. RESEARCH FLOW AND METHODS

4.1 Research Flow

This research would be done following the flowchart shown in Fig.2. The experiment is based on photo projection method.

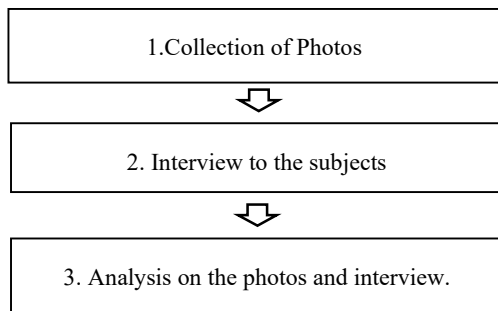


Fig.2. Flowchart of this Study

4.2 Research Process

As shown above, this study will be conducted through 3 steps.

1) Collection of Photos

The subjects are asked to take the train from Kamakura station to Enoshima station and use the camera of their smartphone to take photos of the scenery at the left side of the train freely. The amount, contents, and layout of the photos are not limited. GPS data of each photo will be recorded.

2) Interview to the subjects

An interview to the subjects will be done right after they leave Enoshima station. The subjects will explain the reasons that they take the pictures and what they think when taking the pictures. The interview will be recorded as a voice file and then transcribed into word file by an AI transcriber then calibrated manually.

3) Analysis

Analyze the locations and targeting objects of each usable photo. Also, analyze the interview to find the reasons subjects take each picture and their recalls on each picture. Make a comparison between the results from Chinese and Japanese subjects.

5. RESULTS OF EXPERIMENT AND INTERVIEW

5.1 Overview of the results

The information of each subject is shown in Table.1. 10 Chinese subjects and 10 Japanese subjects took part in the experiment.

Table.1. Results from Each Subject

	Amounts of Photos Taken	Amounts of Usable Photos	Amounts of Unusable Photos
C1	23	19	4
C2	30	27	3
C3	20	20	0
C4	13	13	0
C5	9	9	0
C6	9	9	0
C7	114	113	1
C8	37	35	2
C9	22	21	1
C10	17	17	0
Chinese Total	294	283	11
J1	57	57	0
J2	15	15	0
J3	11	11	0
J4	9	9	0
J5	21	21	0
J6	8	8	0
J7	10	10	0
J8	34	34	0
J9	19	19	0
J10	50	50	0
Japanese Total	234	234	0
Overall Total	528	517	0

The total amount of usable photo collected in the experiment is 517, including 283 photos taken by Chinese

subjects and 234 photos taken by Japanese subjects.

5.2 The Subjects' Targeting Objects

The objects that the subjects focus on in their photos are classified as shown in Table.2. The targeting object of each photo is defined according to the description of the subjects in the interview. Each photo only has one targeting object.

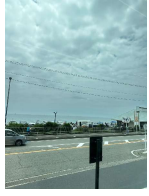









Table.2. Classification of Targeting Objects

Level 1	Level 2	Examples
Natural Objects	Terrain	Mountains
	Plants	Japanese Ivy
	Ocean	Sea
	Sky	Sky, clouds
Artificial Objects	Changing Factors	Vintage cars party
	Residential Buildings	Apartments
	Commercial Buildings	Shops, restaurants
	About Train	Level crossing, the train itself
	Other Transportation	Cars, roads, signs
	Places	Car parks
	Human	Men, women
	Billboards/AD	Billboards, posters
Other Objects	Vending machine, trash station	

Based on the classifications shown in Table.2, the examples of each type of targeting objects are shown below in Table.3.

Table.3. Examples of Photos

Terrain	
Plants	
Ocean	

Sky	
Changing Factors	
Residential Buildings	
Commercial Buildings	
About Train	
Other Transportation	
Places	
Human	
Billboards/AD	
Other Objects	

The proportion of each type of targeting objects among the photos from Chinese and Japanese subjects is shown in Fig.3.

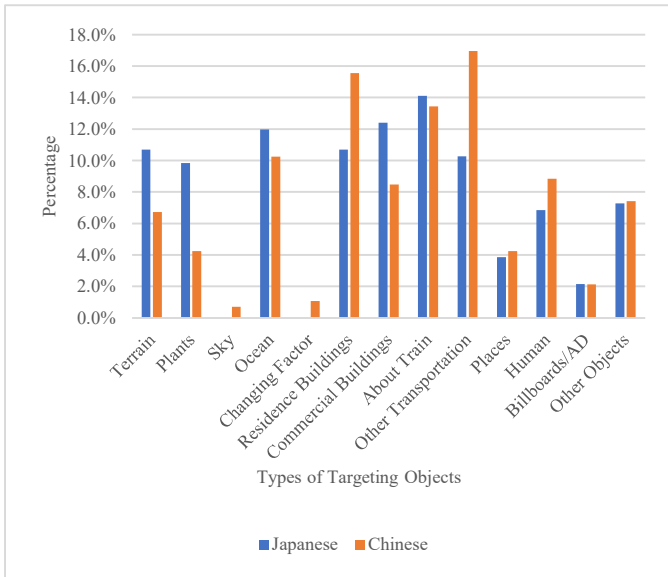


Fig.3.Proportion of Each Type of Targeting Objects

Overall, subjects are more likely to take pictures of sceneries about transportations and commercial buildings. In order to check if the differences shown in Fig.3 is statistically significant, Chi-Square test is done to each type of targeting objects and the results are shown below in Table.4.

Table.4. Results of Chi-Square Test of Targeting Objects

	Terrain	Plants	Sky	Ocean	Changing Factor	Residence Buildings	Commercial Buildings	About Train	Other Transportation	Places	Human	Billboards/AD	Other Objects
Chinese	19	12	2	29	3	44	24	38	48	12	25	6	21
Japanese	25	23	0	28	0	25	29	33	24	9	16	5	17
p value	0.1074	0.0118	0.1976	0.5346	0.1142	0.1055	0.1443	0.8244	0.0284	0.8212	0.403	0.9896	0.9462

According to Table.4, only the difference of plants and other transportation between Chinese and Japanese subjects are statistically significant. Japanese subjects are more likely to take picture of plants and for other transportations, Chinese subject has a significant higher tendency to take picture on them compare to Japanese subjects.

5.3 Analysis According to the Subjects' Recalls when Taking Photos

According to the interview, subjects' recalls could be classified into 10 types according to what the recalls are about. The 10 types of classification are shown in Table.5. The amounts of types of recalls of each photo vary from 1 to 3.

Table.5. Classification of the Subjects' Recalls

Level 1	Level 2	Examples from Interview
About the Subjects themselves	Memories	Last time we did not have lunch here because it was too expensive.

	Future	Maybe I will come here after the interview.
About the People in the Photos	Questions	Are they lining up for a famous restaurant?
	Speculation	Seems like the tourists are very happy.
	Imagination	I was imaging what they are going to do.
About the Objects in the Photos	State	A house has a triangular shape.
	Evaluation	I took the board of the station. I think it is very interesting.
	Feelings	I like the style of this house.
	Knowledges	The design of these houses is actually not allowed in Tokyo.
Others	Links	This is where the foreigner waved his hands in that video.

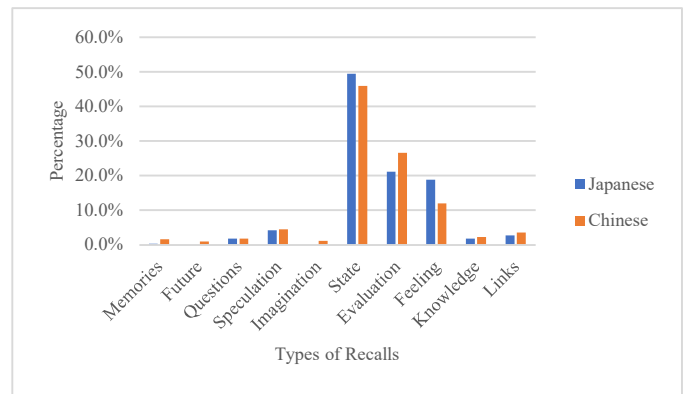


Fig.4. Proportion of Each Type of Recalls

The proportion of each type of recalls generated from the photos from Chinese and Japanese subjects is shown in Fig.4. Overall, there are no huge difference between Chinese and Japanese subjects. In order to check if the differences shown in Fig.4 is statistically significant, Chi-Square test is done to each type of targeting objects and the results are shown below in Table.6.

Table.6. Results of Chi-Square Test on Recalls

	Memories	Future	Questions	Speculation	Imagination	State	Evaluation	Feeling	Knowledge	Links
Japanese	1	0	6	14	0	166	71	63	6	9
Chinese	7	4	8	20	5	209	120	54	10	19
p value	0.0827	0.0835	0.9901	0.8549	0.8528	0.3947	0.0763	0.0082	0.6713	0.2504

According to Table 5.5, only “feeling” type of recalls have a significant difference between Chinese subjects and Japanese subjects. For other types of recalls, there is no significant difference between Chinese and Japanese subjects.

5.4 Analysis according to Locations of Photos

The section between Enoshima station and Kamakura station of the line is separated into 9 parts according to the stations. The separated sections are renamed as shown in Table.7. According to the main type of scenery in each section, sections A to E are considered as residence section. Sections F to H are considered as seaside section. Section I is considered as street section.

Table.7. Names of the Sections

Name of Sections	Sections	Length (km)	Main Type of Scenery
A	Kamakura - Wadazuka	0.8	Residence Area
B	Wadazuka - Yuigahama	0.3	Residence Area
C	Yuigahama - Hase	0.6	Residence Area
D	Hase - Gokurakuji	0.7	Residence Area
E	Gokurakuji - Inamuragasaki	0.8	Residence Area
F	Inamuragasaki - Schirigahama	1.2	Ocean
G	Shichirigahama - Kamakurakokomae	0.9	Ocean
H	Kamakurakokomae - Koshigoe	0.8	Ocean
I	Koshigoe - Enoshima	0.6	Train on the street

The photos are located according to the GPS data recorded during the experiment. The amounts of photos taken in each section by Chinese and Japanese subjects are shown in Fig.5.

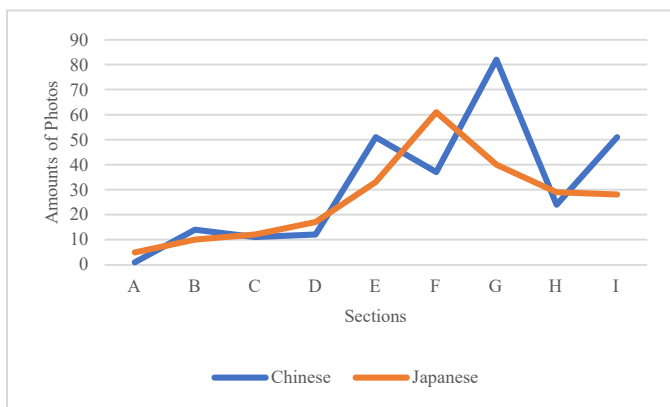


Fig.5. Locations of Photos Taken by Chinese Subjects

Considering the length of residence section, seaside section, and street section is not the same, the amounts of

photos taken per 1000m in each section is shown in Fig.6.

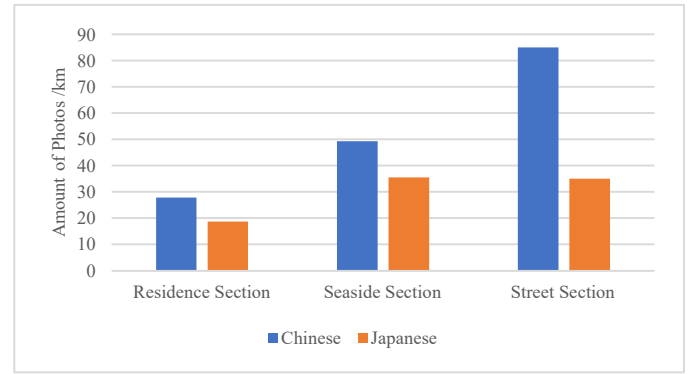


Fig.6. Amounts of Photos Taken per 1000m in Each Section

The results of Chi-square test to the amounts of photos in each section is shown in Table.8. According to Table.8, only the street section shows significant difference between Chinese and Japanese subjects. Chinese subjects are more likely to take photos in street section. No significant difference is shown in other sections.

Table.8. Chi-Square Test of Photos taken in Each Sections

	Residence	Seaside	Street
Chinese	89	143	51
Japanese	77	130	27
p value	0.7239	0.2546	0.0404

5.5 Analysis of Reasons of Taking Photos

In the interview, the subjects introduced their reasons of taking each of their photos. The reasons of taking photos are classified as shown in Table.9.

Table.9. Classification of Reasons of Taking Photos

1 st Level	2 nd Level	Examples
Feelings	Beautiful	I think the scenery is beautiful so I took this picture.
	Interesting	I think the scenery is interesting so I took this picture.
	Shocked	I was shocked that Enoden has tunnels.
	Other Feelings	This gives me the feeling of Kamakura.
Photography	Continuous shot	It's a continuous shot.
	Better Angle	This picture has a better angle than the former one.
	Good Composition	The composition at this moment is great.

Condition of Object	Large Amount	There are a lot of ajisai along the line so I took this picture.
	First Time seeing the object	This is the spot that the ocean appeared for the first time so I took this picture.
	Interaction	That car drove at the same speed with us for about 10 seconds.
	Seeing the object	The ocean is there so I took this picture.
Others	Special Memories	I have been to that restaurant before.
	Speculation	This cafe seems to be delicious.
	The Train Stopped	The train stopped here for a while so I took this picture.

The amounts of photos taken by each subject due to each reason is shown in Fig.7.

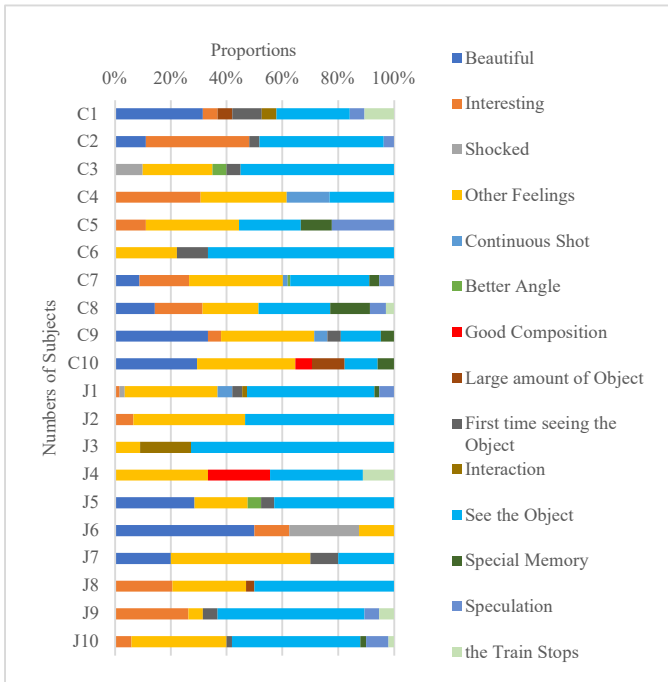


Fig.7. Reasons of Taking Photos

The results of Chi-square test show that the significant difference between the results from Chinese and Japanese subjects are at “beautiful” ($p=0.0031$), “Interesting” ($p=0.0084$), “See the Objects” ($p=0.0003$), and “special memory” ($p=0.0182$). For other reasons of taking photos, no significant difference is shown.

6. DISCUSSIONS

6.1 Discussion on Targeting Objects

The difference on plants could be explained by the difference of experimental seasons as most Chinese

subjects did the experiment in May when most of the ajisais were not blooming but most Japanese subjects did the experiment in June or early July when the ajisais were blooming. For other transportation, one possible explanation could be the difference between cars on Chinese streets and Japanese streets. Japanese subjects are used to cars on Japanese streets but Chinese subjects are not. The enhancement should focus on adding more flowers that bloom in different seasons and enhancing the conditions of other transportation such as good maintenance to the roads and signs.

6.2 Discussion on Subject’s Recalls

Only feelings have a significant difference between Chinese subjects and Japanese subjects, which indicates that Japanese subjects are more likely to generate feelings from the scenery along Enoshima Electric Railway. For enhancement of the sceneries, the enhanced scenery should be able to make the passengers generate good feelings when the passengers see the scenery. For example, trees should not be planted along the seaside section of the line as it will block the sight of the train passengers to see the ocean but flowers could be planted along the line as they can make passengers who see them feel happy.

6.3 Discussion on Locations of Photos

For both Japanese and Chinese subjects, residence section has the lowest amounts of photo taken per 1000m. The reason could be the feeling of speed. In this section, many of the targeting objects are close to the train so it is harder for the subjects to react and aim at such objects. The result also shows the scenery along the residence section of the line is not as attractive as the scenery along the other 2 sections.

Street section has significant difference between Chinese subjects and Japanese subjects and Chinese subjects are more interested in the scenery in this section. Thus, the enhancement could be done by adding Chinese information signs such as guideposts in Chinese or sign boards that contains Chinese to attract Chinese passengers to come to this section.

6.4 Discussion on Reasons of Taking Photos

Chinese subjects have a higher tendency to take photos because of the view is beautiful or interesting, or they have some special memories on the targeting objects. However, for Japanese subjects, they are more likely to

take pictures because they see the objects. In order to attract more Chinese passengers, the enhancement of scenery could focus on make the passengers generate more positive feelings. For enhancement for Japanese passengers, the enhancement of scenery must focus on amplifying the uniqueness of Kamakura.

7. CONCLUSIONS AND FUTURE WORKS

7.1 Conclusions

This study focused on passengers' perceptions on train window scenery of Enoshima Electric Railway and successfully found their tendencies of choices on the sceneries and what they thought when they focus on such sceneries with an experiment based on photo projective method. Then, the comparison between the choices of Chinese and Japanese passengers is made and the similarities and differences between their targeting objects, recalls after seeing the objects, locations of photos, and the reasons of taking photos are found.

In general, Chinese and Japanese subjects have similar targeting objects such as residence buildings and sceneries about transportations in their photos. Chinese subjects are more likely to take pictures of other transportations but Japanese subjects are more likely to take pictures on plants, indicating that passengers would be attracted by the sceneries they are not familiar with. Through photo projective method, the reasons that the subjects took each photo were found. Tourists would mainly take pictures because they see the objects or they have some feeling on the scenery. Chinese subjects are more likely to take pictures because they think the scenery is beautiful or interesting. However, Japanese subjects are more likely to take pictures because they see the objects or they have some special memories on the sceneries. In addition, photo projective method shows that the recalls that the subjects generate when taking the pictures are mainly the state of the object, their evaluations, and their feelings to the scenery. Japanese subjects are more likely to generate feelings compare to Chinese subjects when they take photos of the sceneries.

7.2 Future works

This study is conducted through a detailed study on a case study on Enoshima Electric railway targeting on knowing the difference of Chinese and Japanese passengers' targeting objects and recalls after the passengers see the scenery. The factors that made the

difference between the results from Chinese and Japanese passengers is mainly about their background, which affected what objects are unique to them.

However, most of the subjects in this study are students in Waseda University. Some of the subjects are from Landscape and Design Lab. This background could have an effect on their choice of targeting objects and recalls. Future researches could invite more Chinese and Japanese passengers that are having a trip along Enoden to reduce the effect of academic backgrounds and other effects.

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