

City Image of Developed Station Areas of Tokyo through Foreign Visitors' Reviews on Google Maps

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1. Introduction

Tokyo is characterized by its intensively developed train system. Years of development on stations with their surroundings resulted in multi-layered spaces combining commercial and business areas. Therefore, the boundary of the station became unclear over the years. These unique station areas have attracted countless foreign people since internet-based review platforms became widespread. Google Maps platform offers such reviews containing text and photographs that provide a cognition of places between visitors. Station's expansion and representative elements can be extracted from photographs, while user experiences can be analyzed through text. Through comprehensive analysis of the photographs and text on Google Maps, this research clarifies the city image of developed station areas in Tokyo by foreign visitors.

1.2. Methodology

1.2.1. Research Subject Areas

Through the 'Urban Redevelopment Act' in 1969, the Japanese government granted a permission for construction of offices, restaurants, hotels, etc. inside or attached to the station buildings⁽¹⁾.

Considered as 'Urban Renaissance Urgent Redevelopment Areas⁽²⁾', several major station areas in Tokyo undergo constant renewals, and redevelopments, which were chosen as the research object of this study.

6 major stations located on the Yamanote Line including Ikebukuro (IKB), Shinjuku (SJK), Shibuya (SBY), Shinagawa (SGW), Tokyo (TKY), and Akihabara (AKB) were selected for their potential to attract foreign visitors and their significance in terms of cultural and historical value. In this study, Google Maps reviews accompanied by both photos and text were analyzed respectively⁽³⁾ to provide an overall image of the station areas (Fig.1).

2. Photograph Analysis

Photograph analysis consist of the main part which is Photographs shared by foreign visitors to reveal the targeted phenomenons and the extent of the station, and supporting part which is photographs shared by Japanese people for further comparative analysis.

2.1. Photographs Shared by Foreign People

The photograph analysis consists of 2 parts: Target of Photographs, and Location of Photographs. The purpose of the Target is to determine physical features, while the Location aims at determining station's perceived boundaries.

2.1.1. Target of Photographs

This section discusses the target in photographs. Targets were divided into two main categories: Non-Transportation (nTR) and Transportation (TR) (Table.2). Within the nTR, there are two subcategories: Culture ({Cu}) and Environment ({En}). The {Cu} contains: Events ([Ev]), such as festivals, concerts, and exhibitions; Commercial activities ([Co]), such as food experiences and shopping; and Symbol ([Sy]), referring to significant symbolic places. The {En} includes photographs depicting the landscapes of the surrounding areas and is further divided into City ([Ci]), Neighborhood ([Ne]), and Nature ([Na]). The TR category consists of Station ({St}) comprised of Utility ([U]) and Access ([A]). The [U] corresponds to machines, signs, maps, and circulation areas in the station, while the [A] refers to trains and railways.

The analysis of the photographs (Fig.2) unveil that nTR is more frequently represented (231 in total) than TR (158 in total). The biggest difference in terms of tendency for nTR is observed in SBY 53/5, AKB 42/12. In contrast, SNG shows a strong tendency to TR (17/41).

In terms of subgroups, both {St} and {En} takes around 40% each, while {Cu} takes slightly less than 20% of all photographs.

In regards to nTR, all stations show a preference for {En} over {Cu}, except for IKB where {Cu} holds a dominant proportion, revealing that cultural elements play a crucial role alongside transportation elements in this specific station. SJK and TKY both place significant emphasis on {En} compared to {Cu}, suggesting that the cityscape of these stations strongly appealing to foreign visitors.

Depending on the ratio between nTR and TR, there are 3 types of stations as follows: nTR type, TR type, and nTR+TR type meaning the two categories are balanced

Table. 1. Quantity of Data

Station Name	Text	Photo by	
		Frjn.	Jap.
Ikebukuro IKB	14	38	229
Shinjuku SJK	70	184	261
Shibuya SBY	41	133	162
Shinagawa SNG	38	145	207
Tokyo TKY	110	197	323
Akihabara AKB	39	101	188
Total	312	813	1370

Station Name:	Photograph Analysis		
	Outside	Outside	Inside
Tokyo	Environment-Neighbourhood	Station-Utility	Culture-Commercial
Review Number: 4-020	Busy station[1] and lots of traffic from early morning until midnight. The station itself is huge[2] and has a lot to offer to commuters and travellers alike. There are several interesting areas worth visiting. For example, Tokyo Character Street, Tokyo Okashi Land, Tokyo Ramen Street, Restaurants & Cafes, Tokyome+ (for gifts, souvenirs, sweets) etc[3]. The list is endless. The station is very clean[4]. Signs are easy to read. Coin operated lockers are available. Free wifi is offered in some areas. Baby room available in basement 1 North Street[5].		
Location:	Environment-Neighbourhood	Station-Utility	Culture-Commercial
Target:	Environment-Neighbourhood	Station-Utility	Culture-Commercial
	[1]Crowdedness [2]Spaciousness [3]Food & Shops [4]Cleanness [5]Facility & Staff		

Fig.1. Research Flow Example

Chapter 2. Photograph Analysis
Chapter 3. Text Analysis
Chapter 4. Integrated Station Analysis
Chapter 5. Conclusion

in ratio. Station-specific results indicate that AKB and SBY belong to nTR, targeting {Cu}+{En} more than transportation itself, and that these stations have exceeded their original purpose and expanded their meaning in collective memory. SNG belongs to TR type, indicating that it is primarily focused on transportation as 41 out of 58 targets are focused on the {St} itself. IKB, TKY, and SJK stations are found to be of the [nTR+TR] type. More specifically, SJK and TKY target {St}+{En}, while IKB station targets {St}+{Cu}.

2.1.2. Location of Photographs

This section identifies the locations of photographs by the position of the photographer to find the extension of the station area and any potential accumulative points. The location was classified into 2 groups as Outside ([Ou]) and Inside ([In]). Photographs taken outside the ticket gates are considered as [Ou], while those taken inside are classified as [In].

Based on the location analysis, 283 out of 386 photographs are [Ou], indicating that there is a preference for visitors to focus on the surrounding area rather than station-based targets. The comparison between stations (Fig.2) shows that some stations have a higher proportion of [Ou], while others have just below the average. Considering the results, there are two types of stations identified: Outside Oriented Type as SBY and AKB stations and Inside Oriented Type as SJK, TKY, SNG, and IKB.

2.2. The Comparison of Japanese Visitor's Photographs to Foreign Visitors'

This chapter aims to provide insights into various perspectives on station areas and to differentiate the unique features and similarities between stations with regards to Japanese and foreign visitors. This further highlights the intriguing aspects of foreign visitors' perception.

2.2.1. Comparison of Targets

The findings show that Japanese visitors tend to focus more on transportation targets compared to foreign visitors. SNG is an exception to this trend but still shows a

close proportion. The biggest difference in proportion can be seen in AKB and SBY, while TKY and SNG show the closest proportion.

As for nTR, the findings indicate that there are differences in the ratio of {Cu} and {En} in each station, with the exception of SNG, TKY, and SBY, where the two elements are balanced for both groups of visitors. The biggest difference is observed in IKB, where the proportion of {Cu} decreases from 80% for foreign visitors to 28% for Japanese visitors. On the other hand, there is a clear decrease in the ratio of {En} in AKB and SJK.

2.2.2. Comparison of Location

Comparison on locations suggest that there is a larger proportion of [Ou] photos among foreign visitors. This may indicate that foreign individuals tend to perceive the station in the context of its surrounding environment. The greatest difference in this pattern is observed at AKB, while the least difference is found at TKY.

3. Text Analysis

This chapter analyses written reviews by foreign visitors to provide a deeper insight into the data that cannot be obtained through photograph analysis alone.

Text discussions were divided into 2 sub-categories as Activities (AC) that corresponds to occurrences in the area, and Atmosphere (AT) that corresponds to environmental setting of a station area. Under AC, 5 categories are identified: Picturing & Viewing (<Pv>), Seeing Architecture (<Ar>), Engaging in Popular Culture (<Po>), Transferring (<Tr>), and Exploring Food & Shops (<Fs>). Under AT, there are 6 topics as Crowdedness (<Cr>), Spaciousness (<Sp>), Complication (<Cm>), Convenience (<Co>), Cleanliness (<Cn>), and Development (<Dv>) (Fig.3).

The results indicate that, AC and AT is almost evenly distributed with total number of 257 and 301 respectively (Fig.4). However, the station-wise balance between AC and AT shows variation, revealing the presence of 3 different types of stations: AC-focused as AKB with 42 cases of AC out of 63 cases, AT-focused as SJK with 80 cases

Table 2. Target Analysis Contents

Targ.	nTR			TR			Location		
	{Cu}	{En}	{St}	{Cu}	{En}	{St}	[In]	[Ou]	
Sta.	[Ev]	[Co]	[Sy]	[Ci]	[Ne]	[Na]	[U]	[A]	
Total	16	41	17	8	147	110	51	103	283
SNG	2	4	2	9	30	11	22	36	
SNG Fo.	2	1	1	1	13	28	29	49	37
IKB	1	9	2	6	5	7	14	40	44
IKB Fo.	2	7	5	18	26	27	36	69	77
TKY	10	45	32	17	58	77	32	59	41
TKY Fo.	3	8	4	3	43	49	37	32	31
SJK	2	3	2	43	25	15	32	59	41
SJK Fo.	3	8	2	2	25	27	31	47	41
AKB	1	13	27	11	50	28	45	55	62
AKB Fo.	1	20	16	27	13	28	45	55	62
SBY	9	2	16	4	21	3	2	17	62
SBY Jp.	6	9	6	5	23	20	10	17	62

Table 3. Location Analysis Contents

Location	nTR		TR	
	Inside [In]	Outside [Ou]	Inside [In]	Outside [Ou]
Inside the ticket barrier	103	283	103	283
Outside the ticket barrier	22	36	49	37

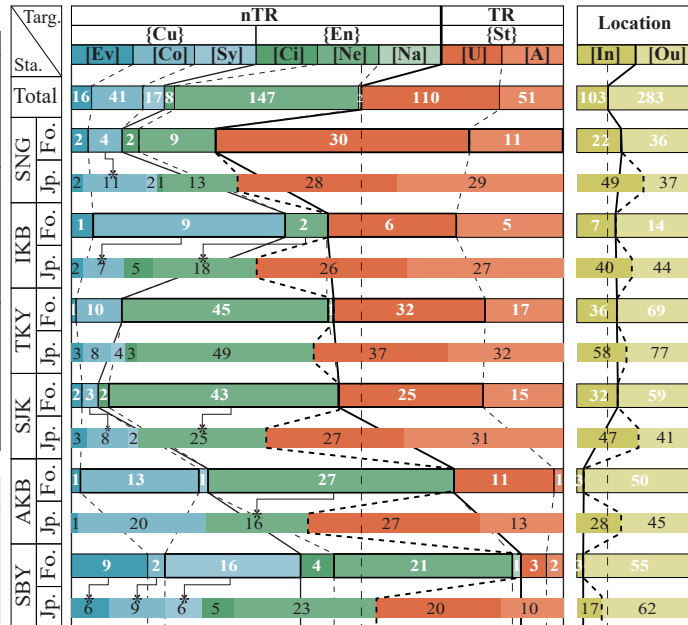


Fig.2. Target and Location Proportions for Each Station

Table 4. Station Types

Type	Targets		Location
	nTR	TR	
Type TR	[St]	Inside Oriented	Inside Oriented
	[St]+[Cu]	Inside Oriented	
nTR+TR Type	[St]+[En]	Inside Oriented	Inside Oriented
	[St]+[En]	Inside Oriented	
Type NTR	[Cu]+[En]	Outside Oriented	Outside Oriented
	[Cu]+[En]	Outside Oriented	

of AT out of 118 cases, and Balanced Type as SBY, TKY, SNG, IKB.

Based on AC categories, the most frequently discussed topics are <Fs> with 103 mentions, followed by <Tr> with 59. Although <Fs> is common among all stations, rest of the topics as <Tr>, <Pv>, <Ar>, and <Po>, had relatively low proportions and did not appear in all stations. Station-wise analysis of the top discussions revealed 3 types of stations in terms of AC. <Tr> + <Fs> frequently mentioned in SNG, SJK, and IKB suggesting that they may be perceived as main transportation hubs by foreign visitors. In fact, SNG and SJK has a Shinkansen system, while IKB serves as the main transportation point for the places in the north-west of the Tokyo. Moreover, In SBY and AKB <Fs> + <Po> appeared frequently, which makes them highly unique in terms of culture. However, the detail of <Po> varied for each station. Lastly, <Fs> + <Ar> are the main discussions in TKY that may suggest the architecture scene in the area is highly remarkable. In fact, this neighbourhood embody both historical and contemporary styles.

As for AT, the most frequently discussed topics are <Cr> with 97 mentions, followed by <Sp> with 69 mentions and <Cm> with 62 mentions respectively. 5 topics appeared at least once in all stations except for <Dv> having the lowest frequency of mention with only 10 times.

Station-wise analysis of the top discussions for AC are distinctive among all stations. However, <Sp> appeared 4 times, and <Cr> appeared 3 times meaning the scale of the station is easily noticeable as a first impression, and the crowdedness of the station is often mentioned in reviews as being extraordinary. The most recurrent discussions are <Cr> + <Co> in AKB, <Cr> in SBY, <Sp> in SNG, <Cr> + <Sp> in SJK, and <Sp> + <Cm> in TKY and IKB. <Sp> and <Cm> appeared 2 times together in TKY, and IKB may suggest that the reason for visitors to find it complicated to navigate is because of the enormous scale of the stations.

4. Integrated Station Analysis

This chapter's analysis reveal the overall image of specified areas through the association of the findings of Chapters 2 and 3, and a number of key findings (Fig.5). The frequent connection between photos and texts are also shown. While stations share certain similarities, they possess unique characteristics distinguishing from each other. SBY and AKB both have a high proportion of [Ne] and {Cu} targets, as well as characteristics related to <Po>, <Fs>, and <Cr> from the discussions. In particular, SBY has a close connection between [Ne]+[Sy] and <Po> + <Cr>, while [Ne] is also linked to <Fs>. As for AKB, there is a strong correlation between [Ne]+[Co] and <Po> and <Fs>. Both stations are characterized by a focus on the enjoyment of food and shops in the neighborhood, although the meaning of <Po> differs. SBY's <Po> centers around symbolic places such as Hachiko Statue, while AKB's primarily focuses on electronics and popular culture shops.

TKY and SJK both have a high ratio of [Ne] and [U] targets in common. However, their discussion topics varied although they have commonalities such as <Fs> and <Sp>. Particularly in TKY, visitors discussed on <Fs> and <Ar> targeting [Ne], while <Fs>, <Sp>, and <Cm> targeting [U]. As for SJK, <Fs> activity and <Cr> atmosphere target [Ne], while <Tr> + <Fs> activities and <Cr> + <Sp> atmospheres targeted [U]. In other words, TKY's neighbourhood is highly characterised by its architectural feature whereas SJK's neighbourhood emphasizes the large crowds and the abundance of shopping and dining areas. Moreover, IKB is primarily characterized by [Co] and [U]+[A]. Discussions suggest that <Fs> targets [Co], while <Tr> activity and <Sp> characteristics target [U]+[A]. The commercialized aspect of IKB stands out more in both photographs and text, which suggest IKB is abundant in terms of food activities and shopping.

Furthermore, SNG is predominantly characterized by [U]+[A]. Discussions indicate that [U]+[A] targets <Tr>

Category	Examples
Activity-AC	Picturing & Viewing 3-008:...the night view of this station is pretty good... 5-010:...perfect place for professional photographers to capture a moment of busy city life/ the tired faces behind the mask...
	Seeing Architecture 4-019:...classic surrounded by modern buildings represented how Japan was... it showed how the old culture met the new one... 4-043:...lots of skyline buildings and skyscrapers...
	Engaging in Popular Culture 4-039:...cartoon/Japan character souvenir and goods such as Hello Kitty, Doraemon, Rilakumma, Snoppy... 3-039:...haloween Shibuya...
	Transferring 2-013:...You can literally access the whole of Tokyo here... 4-037:...Shinkansen line so you can catch bullet train to Hokkaido and down to Kyushu from here!
	Exploring Food & Shops 1-007:...food heaven. The best place to go for a day and night snack...no bad food here. If you wanna eat and culinary life... 2-024:...shopping mall + café + restaurants...
Atmosphere-AT	Crowdedness 3-004:...The station is crazy busy and with a mass of people... 5-004:...one of the busiest stations in the world. At peak time you can almost float along just carried by the people...
	Spaciousness 5-015:...biggest train station in Minato city, Tokyo. It's really huge... 2-018:...station is unfathomably massive...
	Complication 2-037:...I confused to find the right platform. I spent almost 30 minutes to find my boarding station... 6-014:...Inside the station is utter chaos...
	Convenience 1-006:...don't worry because every where you go you can get help from the information... 6-024:...The direction was pretty clear in the station too...
	Cleanness 5-006:...also looks cleaner and well organised than other stations... 4-019:...very clean and well-maintained...
	Development 6-003:...the station is newly renovated, the place is refurbished... 3-014:...some Improvements near platforms 3 and 4...

Fig. 3. Discussion Categories with Examples

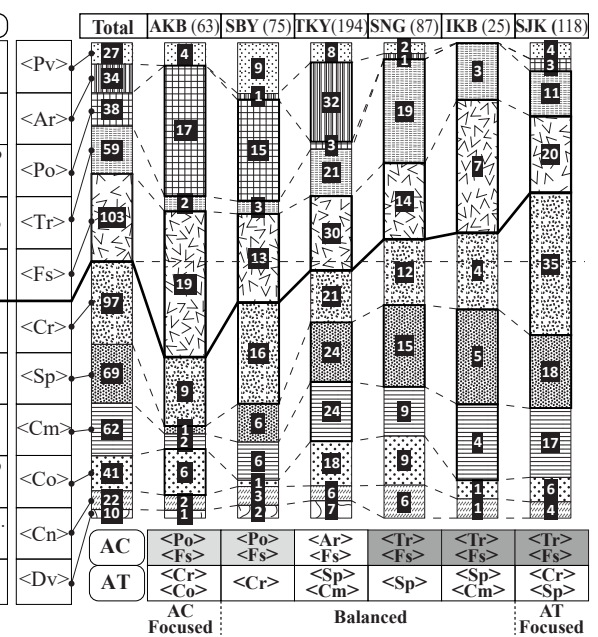


Fig. 4. Discussions' Proportions

and <Fs> activities and exhibits <Sp> characteristics making the station highly station-based. Lastly, SJK, IKB, and SNG possessing <Tr> + <Fs> in discussions, the targets they refer vary. Although <Fs> targets [U] in both 3 stations, [Co] in IKB and [Ne] in SJK is targeted as well.

5. Conclusion

In this study, 6 stations areas under 'Urban Renaissance Urgent Redevelopment Areas' on Yamalote Line were studied. In summary, It was found that different Yamanote Line stations possess unique characteristics that distinguish them from one another. The high number of targets that include the surrounding environment in photographs suggested that foreign visitors tend to view stations as a part of their broader environment, rather than focusing solely on the station itself, and large stations are becoming increasingly integrated with their surroundings. Furthermore, the text results indicated that foreign visitors are highly attracted to stations that have unique, cultur-

ally-significant features beyond basic amenities such as transportation and food. This highlighted the importance of understanding the specific characteristics of each station in order to effectively revitalize urban areas and attract more visitors. Overall, this study provides valuable insights into the perceptions of foreign visitors towards stations that under development and their role in urban redevelopment which can help to inform decision-making and development strategy.

Notes:

(1) Ito, K. and Chiba, M. (2001). Railway Stations and Local Communities in Japan Evolving Relationships between Station Buildings and Local Communities. [online] Available at: https://www.ejrcf.or.jp/jrtr/jrtr28/pdf/f04_ito.pdf [Accessed 27 Jan. 2023].

(2) Section 3 Development and Redevelopment of Urban Areas 1 Policy for Urban Redevelopment. (2009). https://www.toshiseibi.metro.tokyo.lg.jp/eng/pdf/index_03-3.pdf?2009 [Accessed 27 Jan. 2023].

(3) Data utilized in this research was filtered as top reviews and later retrieved from Google Maps on 31.10.2022. Unrelated data was excluded from this research and the numbers associating each station are finalized after data filtration.

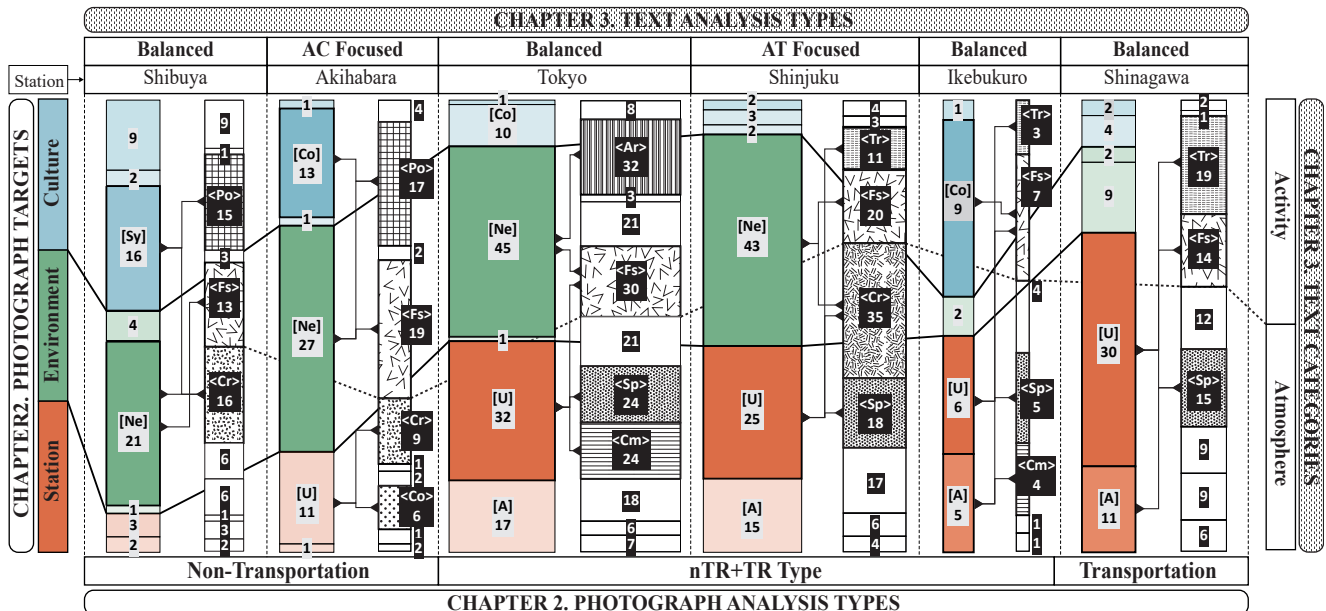


Fig. 5. Overall Station Images