

# THE ROLE AND EFFICACY OF KANSEI ASSESSMENT FOR PUBLIC SPACES DESIGN

## A CASE STUDY OF CHINESE, KOREAN AND JAPANESE RAILROAD STATIONS

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### ABSTRACT

Because public spaces are used by people with diverse physical characteristics and cultural backgrounds, it has been customary for many years to pay attention to the safety, accessibility and usability of their design. We agree about the importance of these considerations. However, we believe that it is also important that aesthetics and the *raison d'être* are emphasized in order that the large numbers of the general public who use these public spaces will find them appealing and view them as significant and meaningful. This paper is a subjective survey that examines railroad stations in China (Shanghai City and Nanjing City), South Korea (Busan City), and Japan (Fukuoka City), asking how users view the space of each station from the multiple perspectives of usability, aesthetics and *raison d'être*. The results were analyzed on the basis of the different viewpoints of people according to their different countries and the differences according to different sites. Our results show that South Koreans and Japanese have different viewpoints about the

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same station relatively often and that, despite the common function of railroad stations, spatial differences are influential.

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## **1. INSTRUCTION**

Streets, parks, train stations, and other public spaces must be freely accessible to all. These public spaces serve people of all ages, sexes, and nationalities, including those who are physically challenged or sick, as well as expectant mothers. These users represent a diverse population with respect to physical and mental conditions. Ronald Mace took notice of this diversity in the population and advocated the importance of designs that meet the needs of this diverse population, a concept he established and termed universal design merely 25 years ago. Mace's concept of universal design has since become prevalent in Japan as well, and ease of use has been incorporated as a key aspect in public space designs. Meeting each and every single need of a broad diversity of individuals, however, is not realistic. What's important is to keep in mind that the concept of universal design is built on the basic tenet of "to the extent possible." Meanwhile, more and more product designers, who naturally place a heavy emphasis on ease of use in their works, have in recent years embraced the idea of implementing emotional and affective considerations in their designs in an attempt to create values for people. In addition, through his 1998 book, *The Psychology of Everyday Things*, Donald A. Norman, a cognitive scientist, popularized the idea of the importance of ease of use in designs. And his 2004 book, *Emotional Design*, argued the need for designs that incorporate not only ease of use, but also emotional elements that evoke fun and aesthetic appeal. The author, therefore, believes that it is important for public space-designs to take into account ease of use to the extent possible as well as emotional and affective considerations. Designs that take into account emotional and affective considerations create new values in terms of not only ease of use, but also fun and excitement, giving the so designed public spaces the potential to attract more people. And this is exactly the way public spaces ought to be, that is, easily accessible and valuable to as many people as possible. In this study using the railway station-model, we examined both the role of surveys as a means to implement well-balanced designs between ease of use and emotion and effect, as well as the effects from survey-based public space-designs.

## **2. INSTRUCTION**

This study used railway stations as a model of public spaces. Surveys on railway stations were conducted in three countries: China, South Korea, and Japan. Stations surveyed were Shanghai South and Nanjing in China, Busan in South Korea, and a complex station serving both private railway and subway lines located in Fukuoka, Japan. First, a survey was conducted on Busan station in South Korea and the complex station in Fukuoka, Japan, with a comparative analysis performed on the

answers provided by the Japanese and Korean respondents. The survey results were then made available to students who were asked to come up with a proposed design for each of the stations surveyed. Subsequently interviews were held to find out what impacts these survey results had on the students. Another survey was conducted on two stations in China for comparative analysis. An attempt was then made to identify aspects considered important in drawing up a design plan based on the survey results. Based on these two different surveys conducted to allow comparative analyses of the view on railway station between Koreans and Japanese, and the difference in the stations in China, the role and effects of surveys in designing public spaces were analyzed.

### **2.1. Survey conducted in South Korea and Japan (Japan-Korea survey)**

This was a subjective survey in which respondents, 30 each of Koreans and Japanese, answered questions on a questionnaire by selecting multiple-choice answers based on a 4-step scale ranging from agree to disagree. Questions were prepared with considerations given to the characteristics of each railway station. The obtained results were tallied and analyzed by a t-test to identify any statistically significant differences in the responses between Koreans and Japanese. The survey results were then provided to students, who were asked to draw up design proposals without any conditions attached. After the proposed designs were submitted, the Japanese students involved in drawing up their design were interviewed to find out about the relationship between the survey results and their proposal.

### **2.2. Survey conducted in China**

As with the Japan-Korea survey, this was a questionnaire-based subjective survey. The China survey was conducted using only Chinese respondents on two Chinese railway stations in order to allow a comparative analysis of the subjects. Questions were prepared with considerations given to the characteristics of each railway station. The obtained results were analyzed by a t-test to identify any statistically significant differences in the responses received between the stations. Information considered important to designing these stations surveyed was identified under a hypothetical situation in which the railway stations were to be redesigned.

## **3. RESULTS OF COMPARATIVE ANALYSIS BETWEEN KOREA AND JAPAN**

In the Japan-Korea survey, for the sake of convenience, a score of 4 was assigned to a response of “agree,” 3 to “somewhat agree,” 2 to “somewhat disagree” and 1 to “disagree.” The mean score for the responses to each question was then determined, respectively, for Koreans and Japanese. A t-test was then conducted to perform comparative analysis. The two railway stations subject to this survey serve different functions. The Busan station in South Korea is a trunk-line station for longhaul express trains that provide connections to other Korean cities. The complex station in Fukuoka, Japan, on the other hand, serves both a private railway

that runs across the Fukuoka prefecture and a subway line that runs within the city limit, with the private-line and subway stations connected by a station building and an underground shopping arcade, forming an urban railway station located in the largest downtown area of the Kyushu island. Due to these differences in function and characteristics, different questionnaires were used to survey these two stations. Common between these two stations is the fact that each of them is visited by a large number of tourists from its counterpart city (Busan and Fukuoka). Figure 1, 2 shows the results of comparative analysis of the responses from respondents of the two countries on questions regarding each station. The right side of the graph indicates positive responses of agree and somewhat agree. The left side of the graph represents negative responses of disagree and somewhat disagree. The upper part of each category shows the result from the Japanese and the lower part shows the result from the Koreans. Based on the distribution for Busan station, we examined tendencies in the responses about Busan station provided by the 60 respondents. Overall, the evaluations were positive, with the Japanese giving a more positive assessment than the Koreans on Busan station. Nonetheless, with respect to easy access for the physically challenged and elderly, more than half of the Japanese respondents gave a negative answer, outnumbering the Koreans having the same opinion. The issue of exuding history, local customs, and culture of (Busan) Korea, drew a negative response from more than half of the Koreans and the largest number of the Japanese respondents compared to other issues. These two questions, out of the 18 questions on the questionnaire, received low scores from both the Koreans and Japanese, indicating that the Busan station is deficient in universal design and regional expression, both of which are important aspects in public-space designs. The only issue of which the Japanese respondents were more critical than their Korean counterparts was universal design. This probably reflects the fact that the widespread adoption of the concept of universal design in Japanese products and public spaces has turned Japanese into harsher critics when it comes to universal design. Next, we examined the differences in the views between Koreans and Japanese based on the t-test results. With respect to the Busan station, Koreans and Japanese differed with a statistical significance in the responses to seven out of 18 questions, i.e., less than half of all questions, suggesting Koreans and Japanese hold relatively similar views. Furthermore, instead of characterizing the Korean respondents' appraisals as low and the Japanese respondents' appraisals as high across the board, we saw both the Koreans and Japanese giving relatively high marks, with the difference being that the Japanese gave higher appraisals than the Koreans. As shown in Figure 1, questions to which responses differed significantly between Japanese and Koreans can be classified into: the category of 5.6-5.9, which reflects a difference in the view of "expression," and is the final stage in designing; and the category of 5.13, 5.14, which shows a difference in how the *raison d'être* of Busan station is perceived in the Busan region. Differences in the way these issues are perceived likely resulted from the fact that the Japanese responded to these questions as visitors, while the Korean respondents, who were mostly residents of Busan and daily users of the station, viewed the Busan station in the context of it being part of the Busan's landscape.

Furthermore I suggest the Japanese and Koreans have different mental pictures of the Busan area. The Koreans likely viewed the Busan area as the second largest metropolis of their nation, and their perception of the region is probably influenced by the relationship between Busan and Seoul as well as the relationships with other cities in South Korea. Unlike the Koreans' view, the Japanese view of the Busan area, on the other hand, probably emerged from the context of the country, South Korea, as a whole, rather than from the relationships among cities in South Korea. Such large tendencies in the responses are consistent within the Japanese group and within the Korean group. Although the respondents showed differences in how things were perceived as a result of different views due to varied backgrounds, ascertaining these details at the time of planning would be useful in drawing up and planning design proposals. Therefore, ascertaining the details of each point of view based on which assessments were made by a diverse group of users, rather than just figuring out the high and low scores in the overall evaluation results from the survey, will provide opportunities for consideration as to what kind of characteristics should be implemented in the plan and where. Next, the distribution of results from the survey about the complex station shows that the Koreans gave more positive appraisals than the Japanese. This is opposite from the results on Busan station. The results on Busan station and the complex station suggest that the respondents were more critical of their own country's facility. Compared with the results on Busan station, only a very few Japanese responses were a definitive "agree." On the question of whether the public space exudes history, local customs, and culture of (Fukuoka) Japan, both the Japanese and the Koreans gave responses that ranked the lowest among answers to the entire 13 questions, with approximately 80% of the Japanese responding negatively. In addition, on the issue of availability of well-organized visitor information and other information about the region and smooth connection between the private-line station and subway station, the Japanese respondents gave low appraisals. Their Korean counterparts also gave a very low appraisal on the subject of connection between stations, the second lowest next to their appraisal of exuding Japanese-like characteristics. This complex station, located in the largest downtown area in Kyushu, is where public transportation converges. It has heavy foot traffic both from local residents and tourists. From the viewpoint of ease of use, providing a smooth connection between stations is a prerequisite for this complex station. In this survey, both the Japanese and Korean respondents gave low appraisals to connection between stations, with the Japanese, who are daily users, giving lower scores than the Koreans, who are visitors. This suggests that ease of connection between stations is an issue cared by both the first-time users and the daily users alike. A comparative analysis of the results on the complex station and Busan station indicates Koreans and Japanese show different tendencies in their responses. A t-test also showed that in eight out of ten questions, the Korean respondents gave a significantly higher appraisals compared with their Japanese counterparts. The Korean visitors and the local Japanese residents also appeared to have different views on the issues of giving a sense of anticipation to visitors, a public-space worthy of repeated visits, and fun to walk around. The more lenient appraisals by the Korean visitors may be attributed

to the fact that they were asked to evaluate something in a foreign country unfamiliar to them. The Japanese respondents, on the other hand, were giving their opinions about a public space that they use on a daily basis. And as stated above, Japanese are more focused on designs that incorporate emotional and affective considerations, which may have attributed to the way they responded to these questions. On the issue of availability of well-organized visitor information and other information about the region, the Japanese respondents gave low appraisals, while the Korean respondents gave high appraisals. As local residents, the Japanese respondents most likely felt that information made available to visitors at present is not adequate and that there is more information about the region that could have been provided.

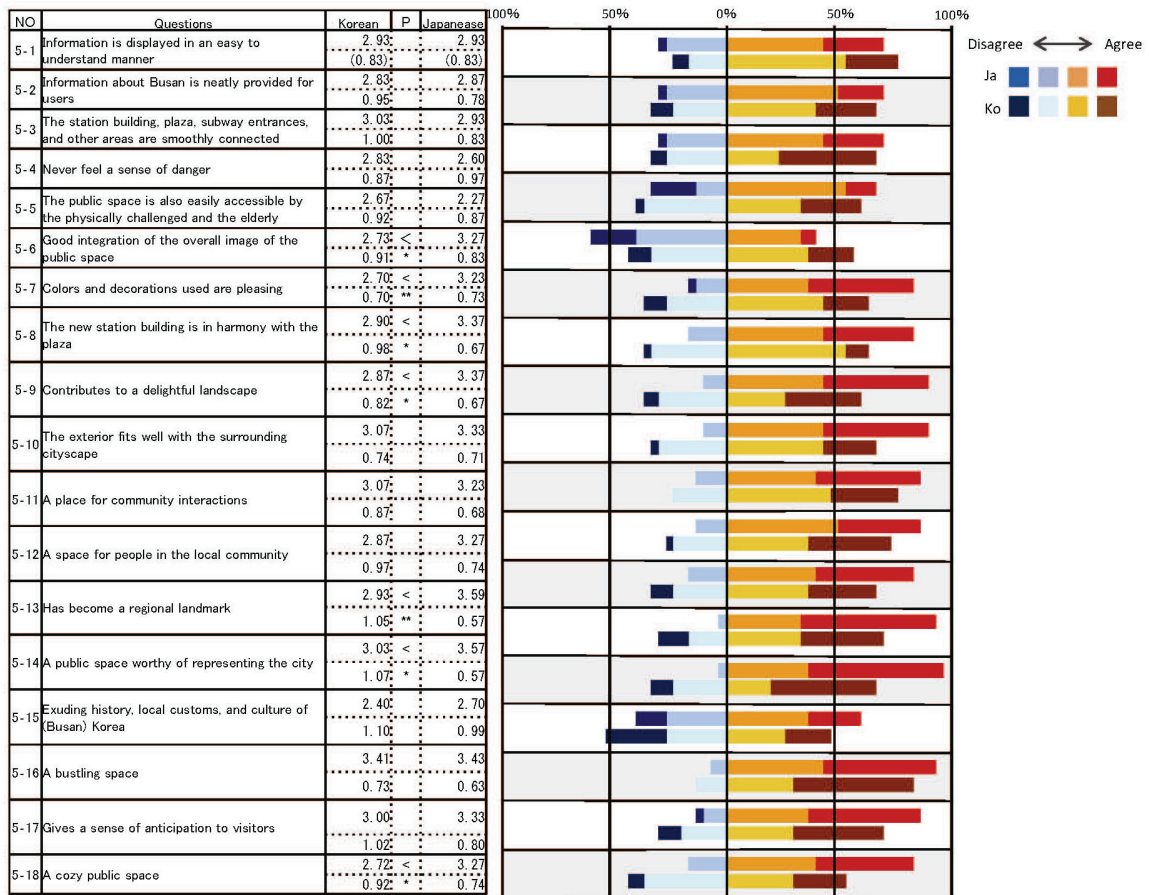
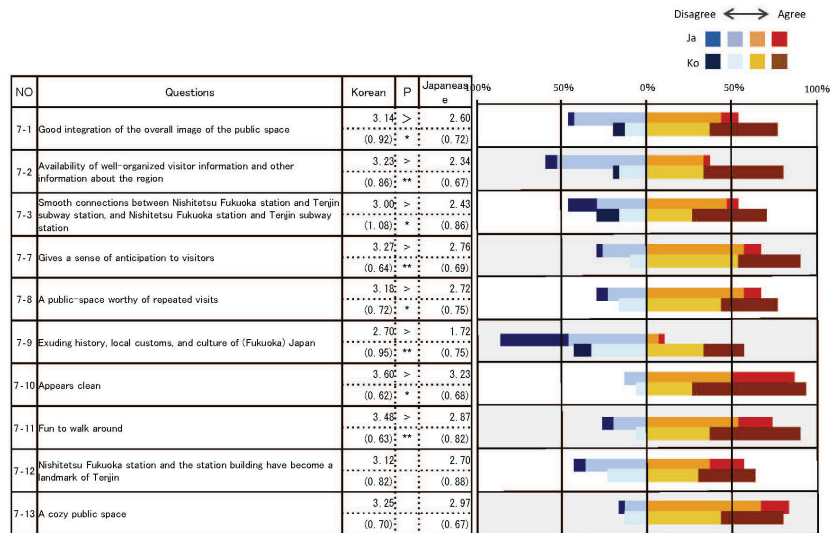


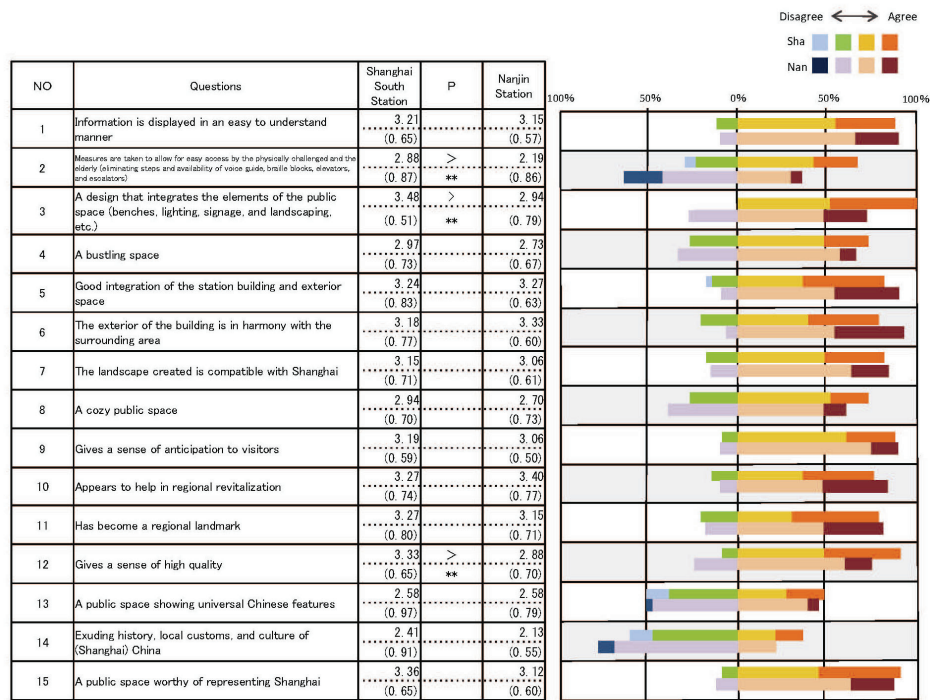
Figure 1: Result of Busan



**Figure 2: Result of Tenjin**

#### 4. RESULTS OF SURVEY CONDUCTED IN CHINA

A survey was conducted in China on the Shanghai South and Nanjing stations. Both stations are considered trunk-line stations used by a great number of people. Due to their expansive sizes, each station was divided into four areas, including the inside area of the station and the station front plaza, and questions were designed for each area. The respondents were also asked to answer another set of 15 questions regarding their overall impression of the station. This paper discusses the responses to the questions on the overall impression about Shanghai South and Nanjing stations. The responses, which were mostly positive on both the Shanghai South and Nanjing stations, showed similar tendencies. Issues that received relatively low marks were: “measures taken to allow easy access for the physically challenged and elderly,” “a public space showing universal Chinese features”, “exuding history, local customs, and culture of (Shanghai) or (Nanjing) China.” This result, which is similar to the findings in the Japan-Korea survey, shows the respondents perceived the two stations as inadequate in both universal design and regional expression. The results of a t-test showed statistically significant differences on three of the fifteen issues. The respondents gave higher marks towards the Shanghai South station over the Nanjing station on each of the issues of: “measures taken to allow easy access for the physically challenged and elderly,” “a design that integrated the elements of the public space,” “and giving a sense of high quality.” Both stations received low marks on “measures taken to allow easy access for the physically challenged and elderly,” but high appraisals on “giving a sense of high quality.” There were very little differences in the tendencies of responses given about these two stations. The results of this survey indicate that respondents had similar opinions of the two stations and thought that both the Shanghai South and Nanjing stations are inadequate with respect to universal design and regional expression.



**Figure 3: Result of China**

## 5. DIRECTIONAL ANALYSIS OF DESIGNS BASED ON RESULT OF THE CHINESE SURVEY

No difference in the results of the survey was noted between the Shanghai South and Nanjing stations. The respondents viewed both stations as deficient in universal design and regional expression as well. Universal design is a widely embraced and deeply rooted concept in China. As China becomes even more developed in the future, it is only natural that this concept of universal design will see even more enhancement. On the other hand, any gradual increase in the permeation of regional expression in designs is unlikely in a China undergoing a rapid development. Regional expression most likely will be among design elements that are overlooked in a developing nation that places too much emphasis on improving infrastructures. China is a huge country with a long history. Its local regions all show their own rich regional characteristics. Giving trunk-line railway stations, which serve as the gateway to each metropolitan area, an identity that reflects the regional characteristics is a crucial part of creating an urbane landscape and giving an identity to a city. When designing facilities such as railway stations that perform identical functions, an effective way of incorporating regional characteristics into the design is to look at the design as a whole and assign characteristics to individual elements of design while maintaining a balance in the overall design. This survey studied only two railway stations: Shanghai South and Nanjing. In order to get a clear picture of how Chinese people perceive railway stations as public spaces, more surveys need to be conducted on other trunk-line stations in cities throughout China. The results of this survey, however, support the direction of planning that places emphasis on universal design and regional expression.



## **6. STUDENTS' PROPOSED DESIGNS BASED ON RESULTS OF THE JAPAN-KOREA SURVEY**

The Japan-Korea survey was jointly conducted by Dongseo University (Busan, Korea) and Kyushu University (Fukuoka, Japan). A similar survey was also conducted on the international ports served by liner routes that link Busan and Fukuoka. The survey results were subsequently provided to students of each school, who were instructed to draw up a specific design proposal for either the railway station or the port that was surveyed based on the survey results. The students were asked to announce their interim reports on the progress of proposal at the Kyushu University and to announce their final reports at the Dongseo University in an attempt to promote students interactions. This project will conclude with the submission of the proposals to the manager of the respective facility of the proposal. To find out whether the survey results played any role in the students' decisionmaking during the course of drawing up their design proposal, brief interviews were conducted after completion of the proposal with the students of Kyushu University. With the hearing designed to find out whether survey results were taken into consideration when drawing up the design proposal, most of the students stated that their design proposal took the survey results into consideration, with attention paid in particular to the result showing a lack of regional expression.

## **7. CONCLUSION**

Respondents in the surveys showed a tendency of giving low marks to each of the stations surveyed in China, Korea, and Japan on issues related to universal design and regional expression. Designs that expressively display regional characteristics are associated with the previously mentioned designs that take into account emotional and affective considerations and evoke fun and aesthetic appeal. As demonstrated in the survey results, the present designs are not viewed as ignoring regional expression entirely. The issue of regional expression is, however, ranked low in importance due to the difficulties in gaining a profound understanding of the local region where the station is located and in displaying that understanding in spatial designs, as well as the lack of a clear need for regional expression, contrary to the case of the universal design. If deficiencies can be clearly identified as in the results of our surveys, planners will be able to get a better picture of the present conditions to help them draw up plans accordingly. Therefore, conducting surveys on not only the ease of use, but also on emotional aspects of design as well as creating a condition that enables an objective understanding of the circumstances will give planners opportunities in the course of drawing up designs and raise the potential for the designs to function effectively. Lastly, these surveys took place in East Asia, a region with long histories and rich non-European culture and customs. It is very likely that a public space under design may come to constitute a part of the regional landscape. When planning public spaces, regional expression may be a highly effective tool of attaining emotional elements such as fun and aesthetic appeal to complement ease of use in a design that takes into account emotional considerations. In public-space planning, the most important issue is to form a good

understanding of the region in question and to give the public space its own identify through the expression of regional characteristics.

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