Using Kano’s Model to Explore the Wait Service Quality of THSR

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Abstract

High speed railway has brought the benefit to the rapid development of national economic, the change of social structure, and the shortening of rural-urban divide so that the citizens in Taiwan present a new expectation of the transport service from THSR. High speed railway is an emerging industry in Taiwan that the operation still requires a period of time to meet the customer requirements and satisfaction. In this case, the important and improvement-needed wait service quality items require being comprehended so as to attract the customers and to enhance the service quality and the competition.

Key words: Kano’s Model, two-dimension quality model, wait service quality, customer satisfaction; Taiwan High Speed Rail Corporation (THSR)
INTRODUCTION

In recent years, the citizens have gradually emphasized the quality of life and the leisure activities, and more people go on a trip or commute by means of transportation so that the transport demands among cities are relatively increased. Besides, the traffic and transportation between the north and the south of Taiwan has become stuffed that numerous streams of people and cars spring up on holidays. The time wasted in waiting is generally undesirable.

Haynes (1990) mentioned that waiting-in-line was common in life, and the waiting time before the customer being serviced was the most serious problem in the process of waiting. The wait was likely to considerably damage the service quality to the customers. Similarly, with the uncertainty in the process of waiting, customers considered wait as a non-value-added activity and a psychological torment. Taylor (1994) indicated that wait was the period in the process of waiting between the customer being ready to be served and actually being served. Diaz and Ruiz (2002) and Sheu et al. (2003) considered the rapid pace of life at present making people have less spare time to wait for services so that customers often regarded wait as a waste of time. In developed countries, people concerned more about the pressure of time and the issue of wait (Katz et al., 1991). Consequently, rapid services and excellent customer waiting management have become the sources of improvement indexes and the competitive advantages for businesses (Davis and Heineke, 1994). Chan (1998) considered wait as the key of resource distribution and efficiency promotion that it played an important role in the measure of service quality. In this case, the smoothness of queues and the reasonable waiting time were considered in the smoothness. Concerning reliability, which was more related to wait psychology, it was expected to release the unease and the anxiety of the customers. Regarding communication, the modernization of the software and the hardware to support the wait as well as the provision of correct information and convenient reservation were taken into account. In terms of convenience, the business hours and the location of the service organization as well as the handiness of procedures were the important factors for further discussions. Then, he provided four factors for multi-wait quality scale, namely the smoothness, the reliability, the communication, and the convenience.

Garvin (1987) proposed that managers should divide and clearly define the quality to acquire the competitive niche so that one-dimensional quality model could be applied to discuss the customer demands. Nevertheless, it was still inadequate; the application of Kano’s model could make up the deficiency of one-dimensional quality model. Kano et al. (1984) indicated that any products or services presented several attributes quality so that Kano’s model was further proposed for the verification. The horizontal coordinate provided the degree of sufficiency of the quality element, where the right presented the existence of the quality element, while the left showed the shortage. The vertical coordinate appeared the degree of customer satisfaction, where the above presented the satisfaction, while the below showed the dissatisfaction, Fig. 1. Based on the relativity of the two coordinates, the
quality elements were classified into
1. Attractive Quality Element. With this quality element, customers would be satisfied; otherwise, customers might accept it but would not feel unsatisfied.
2. One-dimensional Quality Element. With this quality element, customers would be satisfied; or, they would be dissatisfied.
3. Must-be Quality Element. With this quality element, customers would take it for granted and accept it, but would not present better satisfaction; contrarily, customers would be dissatisfied.
4. Indifferent Quality Element. With or without this quality element, the customer satisfaction would not be affected.
5. Reverse Quality Element. With this quality element, customers would feel unsatisfied; on the contrary, customers would show better satisfaction without it.

Within the five classifications, Attractive Quality Element could be regarded as the competitive strategy to increase sales; One-dimensional Quality Element should be prevented from shortage and possessed as much as possible; the existence of Must-be Quality Element would avoid the customer being dissatisfied; Indifferent Quality Element would not appear too much effect; but Reverse Quality Element could not be existed, or it might be harmful.

The first rail welding of THSR in 2003 represented the milestone of Taiwan entering the construction of High Speed Railway that the citizens appeared the new expectation to the transport service of THSR. In such an environment friendly era, THSR appeared the advantages of reducing air pollution, not being affected by climate, and high transport
efficacy so that it would largely affect the choices of the public for transportation. Particularly, it would become a crucial issue to appeal the public with the wait service quality of smoothness, reliability, communication, and convenience. For this reason, this study applied Kano’s model to help THSR comprehend the quality elements for the prior emphasis or improvement. Furthermore, it expected to satisfy the customers with other service equipment and the change of operating environment to shorten the customer perception of wait. The research objectives contained:
1. To find out the classification of various quality elements from Kano’s model and to comprehend the real demand of customers for the wait service quality of THSR.
2. To discuss the significant difference to the wait service quality of THSR from the customers, with various demographic variables.

RESEARCH DESIGN AND METHOD

Based on Chan’s wait quality scale (2002) and the service quality dimensions proposed by Parasuraman et al. (1985, 1988), this study operationally defined the four factors of wait service quality, as below.
1. Smoothness. As the core of wait quality, it required the smoothness of queues, the reasonable waiting time, the balanced supply system, the comfortable environment, the performance proficiency and the response ability of service personnel, and the smoothness of waiting process.
2. Reliability. Related to psychology, the enterprise was expected to manage wait with assistance, guarantee, concern, and compensation to release the psychological feelings of unease and impatience.
3. Communication. The enterprise would announce the wait information with modern software and hardware equipment, send people to actively take care of the customers, as well as provide accurate and updated information and convenient reservation system so as to enhance the interactive communications.
4. Convenience. The enterprise should provide the customers with the open business hours, the convenient service locations, and the handiness of handling procedures.

The questionnaire in this study was designed for three sections, including the first section of filling in personal information, the second section of comprehensive assessment which aimed to realize the customer attributes to THSR, such as the experience of taking, the times of taking, the purpose of taking, the way of buying tickets, the considerations, the largest tolerant waiting time, and the compensation, and the third section of the questions with Kano’s model which applied the four quality elements in the wait service quality proposed by Chan (2002) and referred to the service quality dimensions of P.Z.B., with total 33 weighting questions. The distribution and the retrieval of the questionnaires were completed within March and May, 2007.
The classification of the quality elements applied Multi-user Mechanism proposed by Matzler and Hinterhuber (1998).

**EMPirical RESULTS**

**Classification of two-dimensional quality elements:**

The questions in the THSR wait service quality were classified with two-dimensional quality elements, where 18 Must-be Elements, 14 One-dimensional Elements, and one Indifferent Element were categorized, but not Attractive Element and Reverse Element, Table 1.

<table>
<thead>
<tr>
<th>Type</th>
<th>Item</th>
<th>Must-be Element</th>
<th>One-dimensional Element</th>
<th>Attractive Element</th>
<th>Indifferent Element</th>
<th>Reverse Element</th>
<th>Invalid Element</th>
<th>Two-dimensional quality attribute classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoothness</td>
<td>1. Flexible adjustment and support in light of peak hours</td>
<td>42.6%</td>
<td>28.5%</td>
<td>9.2%</td>
<td>16.5%</td>
<td>1.2%</td>
<td>1.9%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>2. Waiting time for buying tickets at the counter</td>
<td>40.9%</td>
<td>26.8%</td>
<td>5.4%</td>
<td>17.8%</td>
<td>5.1%</td>
<td>4.1%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>3. Waiting time for booking tickets on-line</td>
<td>38.7%</td>
<td>26.5%</td>
<td>5.6%</td>
<td>24.1%</td>
<td>1.7%</td>
<td>3.4%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>4. Waiting time for booking tickets on the phone</td>
<td>38.4%</td>
<td>26.0%</td>
<td>4.9%</td>
<td>21.7%</td>
<td>2.9%</td>
<td>6.1%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>5. Effects of wait on satisfaction</td>
<td>41.8%</td>
<td>34.3%</td>
<td>7.1%</td>
<td>13.9%</td>
<td>1.0%</td>
<td>1.9%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>6. Availability of equipment utilization</td>
<td>38.7%</td>
<td>35.5%</td>
<td>6.3%</td>
<td>18.2%</td>
<td>0.2%</td>
<td>1.2%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>7. Comfortable waiting area and nice atmosphere</td>
<td>21.2%</td>
<td>44.0%</td>
<td>15.8%</td>
<td>17.0%</td>
<td>0.2%</td>
<td>1.7%</td>
<td>One-dimensional Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>8. Effects of wait on emergency response measures</td>
<td>49.4%</td>
<td>31.1%</td>
<td>3.2%</td>
<td>14.1%</td>
<td>0.0%</td>
<td>2.2%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>9. Smooth waiting queues</td>
<td>38.0%</td>
<td>35.8%</td>
<td>7.3%</td>
<td>17.3%</td>
<td>0.2%</td>
<td>1.5%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>10. Clear labeling of waiting area</td>
<td>44.5%</td>
<td>31.1%</td>
<td>6.1%</td>
<td>16.3%</td>
<td>0.5%</td>
<td>1.5%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Smoothness</td>
<td>11. Professional and nimble service personnel</td>
<td>38.4%</td>
<td>33.1%</td>
<td>9.7%</td>
<td>16.8%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Service</td>
<td>Description</td>
<td>% 23.4</td>
<td>% 34.3</td>
<td>% 17.0</td>
<td>% 23.8</td>
<td>% 0.5</td>
<td>% 1.0</td>
<td>Element</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Smoothness 12. Service personnel actively take care of and coordinate with customers</td>
<td>39.2</td>
<td>34.8</td>
<td>6.3</td>
<td>18.7</td>
<td>0.2</td>
<td>0.7</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Reliability 13. Keep order of the queue</td>
<td>40.6</td>
<td>33.1</td>
<td>8.5</td>
<td>16.3</td>
<td>0.2</td>
<td>1.2</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Reliability 14. Compensation on unsatisfactory wait service</td>
<td>45.5</td>
<td>33.3</td>
<td>3.6</td>
<td>16.5</td>
<td>0.5</td>
<td>0.5</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Reliability 15. Fair queuing</td>
<td>37.0</td>
<td>37.7</td>
<td>9.2</td>
<td>15.6</td>
<td>0.2</td>
<td>0.2</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Reliability 16. Accurate waiting time for THSR</td>
<td>35.5</td>
<td>38.9</td>
<td>8.5</td>
<td>16.5</td>
<td>0.5</td>
<td>0.0</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Reliability 17. Provide special waiting customers with appropriate assistance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability 18. Guarantee and implement the wait service efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability 19. Make other arrangements when the waiting purpose cannot be fulfilled</td>
<td>37.7</td>
<td>29.4</td>
<td>4.4</td>
<td>16.5</td>
<td>6.1</td>
<td>5.8</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Reliability 20. Concern the waiters to release the anxiety</td>
<td>30.2</td>
<td>35.0</td>
<td>14.4</td>
<td>19.5</td>
<td>0.5</td>
<td>0.5</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Communication 21. Provide multiple queuing types</td>
<td>28.2</td>
<td>27.0</td>
<td>12.9</td>
<td>27.5</td>
<td>2.7</td>
<td>1.7</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Communication 22. Announce the related waiting information</td>
<td>40.4</td>
<td>28.7</td>
<td>7.8</td>
<td>22.6</td>
<td>0.2</td>
<td>0.2</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Communication 23. Provide various waiters with individual service</td>
<td>22.6</td>
<td>29.9</td>
<td>15.1</td>
<td>30.7</td>
<td>0.5</td>
<td>1.2</td>
<td>Indifferent</td>
<td></td>
</tr>
<tr>
<td>Communication 24. Considerate facilities equipped in waiting area</td>
<td>22.9</td>
<td>35.8</td>
<td>18.7</td>
<td>21.7</td>
<td>0.7</td>
<td>0.2</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Communication 25. Duly Inform the waiting reason and time</td>
<td>43.8</td>
<td>33.6</td>
<td>6.3</td>
<td>15.6</td>
<td>0.5</td>
<td>0.2</td>
<td>Must-be</td>
<td></td>
</tr>
<tr>
<td>Communication 26. Present empathy and consideration to the waiters</td>
<td>29.0</td>
<td>40.4</td>
<td>12.9</td>
<td>17.0</td>
<td>0.2</td>
<td>0.5</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Convenience 27. Convenient business hours</td>
<td>30.7</td>
<td>40.1</td>
<td>10.0</td>
<td>17.0</td>
<td>1.0</td>
<td>1.2</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Convenience 28. Convenient handling procedures for wait</td>
<td>36.3</td>
<td>38.4</td>
<td>7.1</td>
<td>16.8</td>
<td>0.0</td>
<td>1.5</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Convenience 29. Convenient locations</td>
<td>27.5</td>
<td>43.8</td>
<td>12.2</td>
<td>14.4</td>
<td>0.7</td>
<td>1.5</td>
<td>One-dimensional</td>
<td></td>
</tr>
<tr>
<td>Conveni</td>
<td>Treat the wait problems with sincere and enthusiasm</td>
<td>33.8%</td>
<td>41.1%</td>
<td>10.9%</td>
<td>13.6%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>One-dimensional Element</td>
</tr>
<tr>
<td>Communi</td>
<td>Provide modern communication equipment in waiting area</td>
<td>19.0%</td>
<td>33.3%</td>
<td>23.4%</td>
<td>23.8%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>One-dimensional Element</td>
</tr>
<tr>
<td>Reliabili</td>
<td>Immediately handle customer complaints or opinions</td>
<td>42.1%</td>
<td>38.0%</td>
<td>3.4%</td>
<td>16.1%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>Must-be Element</td>
</tr>
<tr>
<td>Conveni</td>
<td>Convenient transit routes</td>
<td>28.2%</td>
<td>47.0%</td>
<td>10.2%</td>
<td>13.6%</td>
<td>0.2%</td>
<td>0.7%</td>
<td>One-dimensional Element</td>
</tr>
</tbody>
</table>

**Chi-square test of independence:**

1. **Correlation between genders and quality elements**
   
   Different genders presented significant difference on “Convenient handling procedures for wait”.

2. **Correlation between ages and quality elements**
   
   Various ages appeared significant differences on eleven items, including “Flexible adjustment and support in light of peak hours”, “Waiting time for booking tickets on-line”, “Effects of wait on satisfaction”, “Professional and nimble service personnel”, “Service personnel actively take care of and coordinate with customers”, “Keep order of the queue”, “Guarantee and implement the wait service efficiency”, “Concern the waiters to release the anxiety”, “Announce the related waiting information”, “Provide various waiters with individual service”, and “Convenient transit routes”.

3. **Correlation between marital status and quality elements**
   
   Different marital statuses presented significant differences on six items, such as “Waiting time for buying tickets at the counter”, “Effects of wait on satisfaction”, “Availability of equipment utilization”, “Effects of wait on emergency response measures”, “Fair queuing”, and “Make other arrangements when the waiting purpose cannot be fulfilled”.

4. **Correlation between occupations and quality elements**
   
   Various occupations appeared significant differences on sixteen items, including “Flexible adjustment and support in light of peak hours”, “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on-line”, “Waiting time for booking tickets on the phone”, “Effects of wait on satisfaction”, “Availability of equipment utilization”, “Fair queuing”, “Accurate waiting time for THSR”, “Provide special waiting customers with appropriate assistance”, “Make other arrangements when the waiting purpose cannot be fulfilled”, “Concern the waiters to release the anxiety”, “Duly Inform the waiting reason and time”, “Present empathy and consideration to the waiters”, “Provide modern communication equipment in waiting area”, “Immediately handle customer complaints or opinions”, and “Convenient transit routes”.

5. **Correlation between educational background and quality elements**
Distinct education backgrounds appeared significant differences on nineteen items, such as “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on-line”, “Waiting time for booking tickets on the phone”, “Effects of wait on satisfaction”, “Availability of equipment utilization”, “Comfortable waiting area and nice atmosphere”, “Effects of wait on emergency response measures”, “Smooth waiting queues”, “Clear labeling of waiting area”, “Professional and nimble service personnel”, “Service personnel actively take care of and coordinate with customers”, “Guarantee and implement the wait service efficiency”, “Concern the waiters to release the anxiety”, “Provide multiple queuing types”, “Provide various waiters with individual service”, “Considerate facilities equipped in waiting area”, “Present empathy and consideration to the waiters”, “Immediately handle customer complaints or opinions”, and “Convenient transit routes”.

(6) Correlation between monthly salary and quality elements

Different monthly salaries showed significant differences on ten items, including “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on-line”, “Comfortable waiting area and nice atmosphere”, “Professional and nimble service personnel”, “Keep order of the queue”, “Provide special waiting customers with appropriate assistance”, “Guarantee and implement the wait service efficiency”, “Duly Inform the waiting reason and time”, “Provide modern communication equipment in waiting area”, and “Convenient transit routes”.

(7) Correlation between residential places and quality elements

Various residential places presented significant differences on three items, such as “Effects of wait on emergency response measures”, “Provide special waiting customers with appropriate assistance”, and “Provide multiple queuing types”.

(8) Correlation between the experiences of taking THSR and quality elements

The experiences of taking THSR showed significant differences on fourteen items, including “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on the phone”, “Availability of equipment utilization”, “Effects of wait on emergency response measures”, “Compensation on unsatisfactory wait service”, “Provide special waiting customers with appropriate assistance”, “Guarantee and implement the wait service efficiency”, “Provide multiple queuing types”, “Provide various waiters with individual service”, “Duly Inform the waiting reason and time”, “Convenient business hours”, “Convenient locations”, “Provide modern communication equipment in waiting area”, and “Immediately handle customer complaints or opinions”.

(9) Correlation between average estimated-times of taking THSR and quality elements

The average estimated-times of taking THSR presented significant differences on fourteen items, such as “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on-line”, “Waiting time for booking tickets on the phone”, “Availability of equipment utilization”, “Comfortable waiting area and nice atmosphere”, “Effects of wait on emergency response measures”, “Compensation on unsatisfactory wait service”, “Provide
special waiting customers with appropriate assistance”, “Guarantee and implement the wait service efficiency”, “Make other arrangements when the waiting purpose cannot be fulfilled”, “Provide multiple queuing types”, “Provide various waiters with individual service”, “Convenient business hours”, and “Treat the wait problems with sincere and enthusiasm”.

(10) Correlation between the purpose of taking THSR and quality elements

The purposes of taking THSR appeared significant differences on seven items, including “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on-line”, “Waiting time for booking tickets on the phone”, “Smooth waiting queues”, “Guarantee and implement the wait service efficiency”, “Concern the waiters to release the anxiety”, and “Duly Inform the waiting reason and time”.

(11) Correlation between the way of buying tickets and quality elements

The ways of buying tickets presented significant differences on four items, such as “Waiting time for booking tickets on-line”, “Comfortable waiting area and nice atmosphere”, “Announce the related waiting information”, and “Duly Inform the waiting reason and time”.

(12) Correlation between the factors of taking THSR and quality elements

The factors of taking THSR showed significant differences on nine items, including “Waiting time for buying tickets at the counter”, “Availability of equipment utilization”, “Effects of wait on emergency response measures”, “Smooth waiting queues”, “Clear labeling of waiting area”, “Compensation on unsatisfactory wait service”, “Fair queuing”, “Provide various waiters with individual service”, and “Duly Inform the waiting reason and time”.

(13) Correlation between the tolerant waiting time and quality elements

The tolerant queuing time for buying tickets appeared significant differences on ten items, including “Flexible adjustment and support in light of peak hours”, “Waiting time for booking tickets on the phone”, “Professional and nimble service personnel”, “Compensation on unsatisfactory wait service”, “Accurate waiting time for THSR”, “Guarantee and implement the wait service efficiency”, “Concern the waiters to release the anxiety”, “Announce the related waiting information”, “Convenient business hours”, and “Convenient transit routes”.

(14) Correlation between booking tickets on-line and quality element

The tolerant time for booking tickets on-line showed significant differences on thirteen items, including “Flexible adjustment and support in light of peak hours”, “Clear labeling of waiting area”, “Professional and nimble service personnel”, “Service personnel actively take care of and coordinate with customers”, “Keep order of the queue”, “Compensation on unsatisfactory wait service”, “Fair queuing”, “Accurate waiting time for THSR”, “Concern the waiters to release the anxiety”, “Announce the related waiting information”, “Convenient handling procedures for wait”, “Immediately handle customer complaints or opinions”, and “Convenient transit routes”.

(15) Correlation between the tolerant time for booking tickets on the phone and quality elements
The tolerant time for booking tickets on the phone presented significant differences on ten items, such as “Waiting time for buying tickets at the counter”, “Waiting time for booking tickets on the phone”, “Availability of equipment utilization”, “Effects of wait on emergency response measures”, “Provide special waiting customers with appropriate assistance”, “Duly Inform the waiting reason and time”, “Convenient handling procedures for wait”, “Convenient locations”, “Immediately handle customer complaints or opinions”, and “Convenient transit routes”.

(16) Correlation between the tolerant time of waiting for THSR and quality elements

The tolerant time of waiting for THSR appeared significant differences on six items, such as “Effects of wait on emergency response measures”, “Smooth waiting queues”, “Guarantee and implement the wait service efficiency”, “Announce the related waiting information”, “Convenient business hours”, and “Convenient handling procedures for wait”.

(17) Correlation between compensations and quality elements

Compensations presented four significant differences on four items, including “Waiting time for buying tickets at the counter”, “Comfortable waiting area and nice atmosphere”, “Keep order of the queue”, and “Provide various waiters with individual service”.

CONCLUSIONS AND SUGGESTIONS

Conclusions:

Within the 33 quality elements in this study, 18 of them were Must-be elements, 14 One-dimensional elements, and one Indifferent element, showing that most quality elements appeared two-dimensional quality attributes. In this case, customers presented significant differences on the classification of quality elements, with various demographic variables.

(1) Genders

Different genders showed significant differences on “Convenient handling procedures for wait”. Most males considered the item as Must-be element, while females mostly regarded it as One-dimensional element, showing that male consumers presented higher requirements on the rapidness and convenience of handling procedures. In this case, the THSR should make efforts on the provision of this service to shorten the time for handling procedures, such as opening more windows or having machines to substitute manpower.

(2) Ages

Regarding the item of “Concern the waiters to release the anxiety”, the group below 50-year-old considered it as One-dimensional element, while the group above 51-year-old regarded it as Must-be element, presenting that the elders required more concerns. As a result, the THSR should pay more attention on the traveler behaviors and have some staff walk around to provide assistance in time. Moreover, the item of “Announce the related waiting information” also appeared significant differences that the group below 50-year-old mostly considered it as Must-be element, while the group above 51-year-old regarded it as Indifferent
element, showing that the update of waiting information was important for most people.

(3) Marital status

In terms of “Effects of wait on emergency response measures”, both married and single groups regarded it as Must-be element. Family travelers were likely to present anxiety when the schedule was postponed, especially the family with children. Single travelers were likely to delay important businesses resulted from the postponement of the schedule. The THSR therefore had to simulate the response to contingencies and record the drilling to prevent the mechanism from not being operated in emergencies.

(4) Occupation

Regarding the item of “Present empathy and consideration to the waiters”, students, military and civil servants, the manufacturing industry, and the businesses considered it as One-dimensional element, while the service industry regarded it as Must-be element. Since the service industry needed to contact with people, most of them would consider from customers perspectives. Consequently, the THSR should duly provide the waiters with supports.

(5) Educational background

In terms of “Smooth waiting queues” and “Clear labeling of waiting area”, the group with graduate and above degrees tended to Must-be element and considered it as a concrete service for businesses. The THSR therefore had to observe and further improve the flow planning as well as to notice the clarity and visibility of labels. On the other hand, the group with senior high and lower educational background regarded it as Indifferent element, as they could directly ask the service personnel when they had no idea.

(6) Monthly salary

Regarding “Keep order of the queue”, the group with the monthly salary lower than sixty-thousand dollars considered it as Must-be element, while the group with the monthly salary over sixty-thousand dollars regarded it as One-dimensional element. The order of the queue required the attention and the management of the THSR.

(7) Residential place

The group resided in the north considered “Provide multiple queuing types” as Must-be element, while the group in the central and the south regarded it as One-dimensional element. Obviously, with fast life pace, citizens in the north required more smooth queuing type to reduce the waiting time.

(8) Experience of taking THSR

In terms of “Availability of equipment utilization” and “Compensation on unsatisfactory wait service”, people without the experience considered it as One-dimension element, as they might not be familiar with the facilities of THSR and the compensations so that they simply regarded it as satisfactory when provided or dissatisfactory when not provided. People with the experience tended to Must-be element, as they possibly considered that the advanced transportation should appear less failure in the equipment. For this reason, the THSR was
expected to examine the equipment and maintain the high utilization, as well as to draw up the compensation mechanism.

(9) Average monthly estimated-times for taking THSR

Travelers who took THSR for 1~3 times per month considered “Make other arrangements when the waiting purpose cannot be fulfilled” as Must-be element, while the ones who took THSR for more than four times every month regarded it as Indifferent element. It was presumed that travelers who often took THSR were familiar with the environment of the THSR so that they could control the activities on the schedule. Contrarily, the ones who took THSR 1~3 times per month regarded the service being necessary that the THSR should offer it as much as possible.

(10) Purpose of taking THSR

Regarding “Concern the waiters to release the anxiety”, the groups for business trips, returning hometowns, and experiencing the speed considered it as Must-be element, while the groups for traveling and commuting regarded it as One-dimensional element. The THSR was expected to duly provide concerns and assist customers so as to satisfy the customers.

(11) Way of buying tickets

The groups choosing to buy tickets at the counter and on-line considered “Announce the related waiting information” as Must-be element, while the group booking tickets on the phone regarded it as One-dimensional element. The network system allowed the customers to book tickets at any time that it was considered as a due service. On the other hand, the line system for booking tickets on the phone was not completed so that the THSR provided both buying-at-the-counter and booking-on-line to facilitate the ticket operation.

(12) Factors for taking THSR

Regarding “Provide various waiters with individual service”, the group for work demands and comfort considered it as One-dimensional element, while the group for short transport time and close to the location regarded it as Indifferent element. It was presumed that customers taking THSR for work demands were passive so that they would be satisfied when the service was provided. Nonetheless, the group taking THSR for short transport time might considered it fast to reach the destination so that the service was not regarded important.

(13) Tolerant time for queuing

Customers who accepted 6~10 minutes tolerant time considered “Guarantee and implement the wait service efficiency” as Must-be element, but the rest regarded it as One-dimensional element. Apparently, a lot of people stressed on the guarantee of services. For this reason, the THSR should satisfy the service guarantee for the queuing customers.

(14) Tolerant time for booking tickets on-line

The group with the tolerant time below 10 minutes considered “Convenient transit routes” as One-dimensional element, while the group with the tolerant time above 11 minutes regarded it as Attractive element. In this case, convenient transit to reduce the waiting time
would appeal more consumers. The THSR therefore had to carefully plan and operate the arrangements of transit to continuously appeal the customers.

(15) Tolerant time for booking tickets on the phone

Regarding “Immediately handle customer complaints or opinions”, the group with the tolerant time within 5 minutes considered it as Must-be element, while the group with the tolerant time more between 6~10 minutes regarded it as One-dimensional element, showing the necessity of the service. On the other hand, the group with the tolerant time over 11 minutes considered it as Indifferent element. Nevertheless, the THSR should rapidly handle the customer complaints and opinions so that the customers felt respected.

(16) Tolerant time of waiting for THSR

All groups considered “Announce the related waiting information” as Must-be element, presenting that the immediate update of information had great effects on the waiting customers.

(17) Compensation

Regarding “Provide various waiters with individual service”, the group with discount considered it as Indifferent element, as some of them might recall the unpleasant experience when they received the discount again. In this case, the service became unnecessary for this group of customers. However, the groups with full refund and free taking regarded it as One-dimensional element. It was presumed that these two types of customers might present higher expectations; besides, since they did not spend more money, and the THSR could immediately admit the mistake and compensate the customers, they felt satisfied.

Suggestion for the THSR:

The concept of service quality has become more emphasized; particularly, the wait behaviors and psychology of the customers would affect the attitudes to the enterprise. The enterprise therefore has paid more attention on the issue. This study attempted to apply Kano’s model for the classification. Since the operation of THSR has not been long, the outcomes mainly appeared Must-be element and One-dimensional element. Nonetheless, the element classification of Kano would change with time that the survey needs to be implemented once in a while. Aiming at the opinions of the consumers to make appropriate improvement or innovation, the requirements and the supports of the customers would be satisfied.

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