IPA Analysis on Service Quality of Preschools: Based on PZB Model

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ABSTRACT

Abundant as the studies on service quality are, early children education is the most important stage of enlightenment and yet little attention is paid to the service quality of preschool institutions. This study has developed questionnaires about service quality in preschools based on the PZB Model and by referring to the relevant literature and analyzes this service quality through the questionnaire data acquired by stratified sampling. Based on the descriptive statistics and Importance-performance Analysis (IPA) results, this study finds that the most important service quality in preschools is Security Quality and that the best service quality is Communication Quality. Descriptive statistics show that preschool teachers believe that the performance of all service qualities is significantly lower than their importance, demonstrating that these teachers hold that the actual performance of all service qualities in preschools still fails to reach the desired level of quality. Following a careful comparison of IPA of service qualities, this study shows that Communication Quality, Security Quality, and Courtesy Quality exhibit relatively stable performance and are also the service qualities that need to be maintained. Currently, the service quality that preschools need to enhance is Reliability Quality, which is preschools’ performance in their promise to parents. The study data are garnered from teacher questionnaires, which also note that the teachers hold that the preschools make big promises to parents, but actual performance remains unsatisfactory.

Keywords: Service quality, IPA, PZB Model

INTRODUCTION

Due to the nation’s low birthrate in recent years, the admission rate of preschools in Taiwan continues to decrease, and competition among preschools has becomes more severe. To maintain management, preschools have to improve their service quality to attract students and parents (Buell, Campbell, & Frei, 2014; Rahaman, Abdullah, & Rahman, 2011). Therefore, understanding and checking service quality are important actions for preschools (Peisner-Feinberg et al., 2014; Seth, Deshmukh, & Vrat, 2005). What kinds of items of service qualities in preschools are important? Among them, which one is the most important? How are preschools’ performances in those items of service qualities? The researcher hopes to find the answers to these questions and realize the real situation of preschools’ service qualities and provide some suggestions to improve their service qualities.

Although there are some studies on the issue of preschools’ service qualities (Chen, 2008; Chen & Gau, 2011; Sheu, 2010), most studies concentrate on exploring the measurement contents of service qualities, the forms of service performance, or the relation between preschools’ structure quality and process quality, but seldom delve into whether there is a gap between the importance and performance of preschools’ service qualities. It is, in fact, of great importance to understand this gap, since it can be used to judge preschools’ competitiveness and accordingly to seek to enhance it. If the preschools have
remarkable performance in respect of the important service qualities, then it is very easy for them to win the approval and satisfaction of parents, thereby helping to boost competitiveness; if not, it is expected that parents will be dissatisfied, hence resulting in a decline or loss of competitiveness. As a result, preschools must spare no efforts to cope with the aforesaid two scenarios: good performance of important service qualities/poor performance of important service qualities. The former needs to be cautiously maintained, while the latter must be improved and strengthened. On the other hand, unimportant service qualities produce little influence regardless of their performance. Since these service qualities are not valued, parents will not feel or will not care about preschools’ performance in these service items. As a result, the preschools do not need to put in a great deal of effort in these items. If excessive effort is spent on unimportant service items, then it is no doubt counter-productive and the direction should be adjusted.

Unlike previous studies that probe into service qualities, this study will look to understand what are the important service quality items in preschools and the preschools’ performance items, as well as make the following explorations: What are the important service items with good performance that should continue to be maintained in preschools? What are the important service items showing poor performance that should be improved? What are the unimportant service items exhibiting good performance in a state of oversupply that should be adjusted in the future? Figuring out the answers to these questions will help preschools to identify a specific direction to enhance their service qualities and bolster their competitiveness. Therefore, these avenues provide other research objectives of this study.

To achieve the above research objectives, this study distributed questionnaires among preschool teachers by the way of random sampling, distinguishing four quadrants of importance and performance of service qualities using the Importance-performance Analysis (IPA): important/good performance, important/poor performance, unimportant/poor performance, and unimportant/good performance. The goal is to find out the direction in which the preschools should put forth more effort. The research results should provide a reference to preschools to enhance their service qualities and competitiveness.

**LITERATURE REVIEW**

Service quality means the good or bad evaluation of customers’ perception about the service (Tripathi, 2013). It also means customers’ satisfaction toward the service (Sohail & Raza, 2012). If customers are satisfied with the service, then it means the service quality is good. After reviewing past studies, the researcher finds a main measurement scale of service qualities created by Parasuraman, Zeithamle, and Berry (1985), named as the PZB model. There are 10 dimensions of service qualities in the PZB model: Access, Communication, Competence, Courtesy, Credibility, Reliability, Responsiveness, Security, Understanding, and Tangibles. Parasuraman et al. (1985) claimed that the 10 dimensions above are suitable to service firms’ measurement of service qualities. Therefore, this study is based on the PZB model and combines it with the results of past studies in preschools management and service qualities to develop the measurement of service qualities for preschools.

Regarding preschools’ service qualities, some previous studies divided service qualities into structure quality and process quality (Chen & Gau, 2011; O’Kane, 2005; Peisner-Feinberg et al., 2014). Structure quality consists of teacher-student ratio, class size, teacher training, and teacher certificates. Process quality is composed of teacher-student interaction, social activities in education, direct experience of children, environmental observation, response and sensitivity of caregivers, and teaching materials (Peisner-Feinberg et al., 2014). The structure quality is similar to Tangibles Quality and Competence in
the PZB table, while process quality is similar to the connotations of Reliability Quality, Responsiveness Quality, Security Quality, Access Quality, Communication Quality, Courtesy Quality, Credibility Quality, and Understanding Quality in the PZB table. Thus, the connotation of the PZB table can cover structure quality and process quality, and hence the table of preschools’ service qualities in this study is developed based on the PZB table.

After combining the PZB model with the categories of service qualities in preschools, the total dimensions of measurement of preschools’ service qualities in this study are ten. The connotation of each measurement dimension is determined according to the definition of dimensions in the PZB model, service features of preschools, and results of previous research. The details are as follows.

1. Tangibles Quality: means the environment and overall facilities of preschools, including the concept of structure quality of student-teacher ratio, such as new equipment, attractive environment, appropriate dressing of faculty and staff, adequate number of teachers, etc. (Chikwendu et al., 2012; Peisner-Feinberg et al., 2014; Phiri & Mcwabe, 2013; Rahaman et al., 2011; Sohail & Raza, 2012; Tan et al., 2014).

2. Reliability Quality: means preschools can reassure parents. For example, the things the preschools promise parents are realized and the preschools record and properly keep information about students and parents (Chikwendu et al., 2012; Rahaman et al., 2011; Sharma, 2010; Sohail & Raza, 2012; Tan et al., 2014).

3. Responsiveness Quality: means the preschools’ handling of and response to parents’ needs. For example, preschools offer parents convenient services, or faculty and staff are ready to help parents and preschools arrange special care for children with special needs (Chikwendu et al., 2012; Rahaman et al., 2011; Sharma, 2010; Sohail & Raza, 2012; Tan et al., 2014).

4. Access Quality: means the preschools’ reception of outsiders, parents, and children. For example, a reception (or a communication platform) should be set up in preschools for the public to make inquires, and the time and method of sending children to school and picking them up prescribed by preschools are convenient (Sohail & Raza, 2012).

5. Communication Quality: means the parent-teacher communication and interaction, teacher-student communication and interaction, and process quality in preschools (Cassidy et al., 2005; Cryer et al., 1999; O’Kane, 2005; Peisner-Feinberg et al., 2014; Sohail & Raza, 2012).

6. Credibility Quality: means that the preschools enjoy a sound credit and reputation outside the preschools (Siddique, Karim, & Rahman, 2011).

7. Security Quality: means the security of the environment and various measures in preschools. For instance, environment and facilities are safe, and management measures can properly protect children’s security (Rahaman et al., 2011; Siddique et al., 2011).

8. Professional knowledge: means that the preschools have a professional philosophy about teaching activities, arrangement of teaching materials, tutoring for children, and other process qualities (Cassidy et al., 2005; O’Kane, 2005; Peisner-Feinberg et al., 2014; Siddique et al., 2011).

9. Courtesy Quality: means the service attitude of preschool personnel, such as polite service attitude of faculty and staff, and friendly attitude and dedicated services of faculty and staff (Siddique et al., 2011).

10. Competence Quality: means the teachers’ professional training, teacher certificates, and teachers’ experience and qualifications in preschools, like teachers’ remarkable education background and experience and advanced teaching skills (Cryer et al., 1999; Peisner-Feinberg et al., 2014; Siddique et al., 2011).
How much emphasis do preschools place on the above ten dimensions of service qualities? What is the actual performance? Although past studies did not explore the findings of preschools to these ten dimensions of service qualities, the concepts explored by some studies are similar to some of those dimensions sorted out above. This paper summarizes the above concepts as follows. Cassidy et al. (2005) pointed out that the quality of preschool classroom is an important service quality for preschools, while teaching activities, teaching materials, teachers’ language, and teacher-student interaction are the key factors of deciding classroom quality. According to Cassidy et al., teaching activities, teaching materials, and teachers’ language are concerned with teachers’ professional capability and can be classified as Competence Quality. Teachers’ language also involves the service quality of Courtesy Quality, while teacher-student interaction belongs to the service quality of Communication Quality. This demonstrates that from the perspectives of Cassidy et al., Competence Quality, Courtesy Quality, and Communication Quality are possibly the most important service quality dimensions in preschools.

Chen (2008) showed that the service qualities to which preschools and parents attached the greatest importance are reliability and assurance. Reliability includes whether the preschools can provide healthy and safe meals, whether the things they promise can be completed on schedule, whether they can help children to resolve problems, and whether parents are faithfully notified of the information about preschools. Assurance includes the preschools’ ability to provide a good learning environment, excellent service attitude of staff, extraordinary Competence Quality of teachers, and the employees’ ability to cope with a crisis. Among the above connotations of Chen (2008), if the promised things were completed on time, then this is Reliability Quality in service quality. Providing a good learning environment is Tangibles Quality in service quality. Extraordinary Competence Quality of teachers and the employees’ ability to cope with crisis are Competence Quality in service quality. This indicates that Chen (2008) believed that Reliability Quality, Tangibles Quality, Courtesy Quality, and Competence Quality are possibly the most important service quality dimensions in preschools.

Sheu (2010) presented that the service item which preschool parents most fervently hoped the preschools to perform well in is “preschools stayed great alert to security of children, reassuring parents”. By contrast, the least important service item is “preschool teachers have tidy clothes and grooming and are properly dressed”. The former is Security Quality in service quality, whereas the latter is Tangibles Quality in service quality. This suggests that Sheu (2010) viewed that Security Quality is possibly the most important service quality dimension in preschools, while Tangibles Quality might be the least important service quality dimension.

In the aforesaid study and discussion, the researcher preliminarily summarizes that Courtesy Quality, Competence Quality, Communication Quality, Security Quality, Reliability Quality, and Tangibles Quality are possibly the important service quality dimensions in preschools. However, does this summary meet the actual situation? It is further discussed by empirical data in this study.

**RESEARCH METHODS**

To recognize the real service quality situation in preschools, the researcher applies the method of random sampling to collect the information of current preschool teachers by questionnaires. The researcher refers to the study of Rahaman et al. (2011:7) to design the questions of the ten dimensions and asks for preschool teachers to evaluate the important degree of every dimension of service quality and evaluate the preschools’ performance in such a dimension. The score of importance of every service quality is from one to seven. A higher score means that service quality is very important. Similarly, the
score of preschools’ performance of every service quality is from one to seven, and a higher score means the performance is very good.

This study applies the statistic method of IPA to examine the data and separate the preschools’ service qualities into four areas (Chen, Chang, & Cheng, 2010; Hollenhorst et al., 1992; Martilla & James, 1977). The processes of IPA are as follows.
1. Calculate the general average of the expected service quality importance of all samples and the general average of the actual performance of service qualities.
2. A IPA analysis chart about the importance and performance of service quality was developed by taking the average of the service quality’s importance as the Y axis and the average of performance as the X axis. Four quadrants (areas) are then distinguished.
3. Definition and naming of each quadrant (area):
   The first quadrant is the area featured by high service quality importance and high actual performance, called the area of maintaining.
   The second quadrant is the area featured by high service quality importance but low actual performance, called the undersupply area.
   The third quadrant is the area featured by low service quality importance and actual performance, called the area of low supply and demand.
   The fourth quadrant is the area featured by low service quality importance but high actual performance, called the oversupply area.
4. The average score of each connotation of service qualities is inspected to understand which dimensions of service qualities are in an undersupply or an oversupply and which should be maintained.
5. The service dimensions in the undersupply area are the dimensions needing priority improvement.

Through the above IPA procedures, we can understand the gap between the importance and performance of service quality items in Taiwan’s preschools and find out what needs to be maintained and be improved.

RESEARCH RESULTS

Table 1 shows the results from the analysis of the importance and performance of service qualities. According to the data on the right side of Table 1, we find that among 10 dimensions of service qualities, preschools’ teachers think the most important one is Security Quality, the second is Reliability Quality, and the third is Communication Quality. This means that Security Quality is a core service request and that preschools have to provide a secure environment for students and maintain students’ safety. Reliability Quality and Communication Quality are also of great importance, and so preschools must work hard to earn parents’ trust so that parents can send their children to preschools in good faith, and preschools should make a great effort to maintain sound communication and interaction with parents.

According to the data on the left side of Table 1, we find that among 10 dimensions of service qualities, preschools’ teachers think the best preschool service performance is Communications Quality, the second is Courtesy Quality, and the third is Security Quality. This means that most preschools are good at communication with parents, pay more attention to maintain courtesy, and provide a secure environment. From the t value in the rightmost column of Table 1, among the 10 dimensions of service qualities, the teachers’ assessment of the importance of various service qualities and the preschools’ actual performance in all service qualities present significant differences (p<.05). Moreover, the importance of
the 10 dimensions is higher than their performance, suggesting that preschools still need to enhance the performances of all service qualities.

Table 2 and Figure 1 are the IPA results. According to the statistic results of Table 2, we find that among the 10 dimensions of service qualities in preschools, three have high importance and high performance, six dimensions have low importance and low performance, and one dimension has high importance but low performance. The high importance and high performance of service qualities are Communications Quality, Security Quality, and Courtesy Quality, implying these three dimensions are important to preschools and the preschools’ performances are good in these three dimensions. Thus, the preschools should maintain the quality of these services. The low importance and low performance of service qualities are Tangibles Quality, Responsiveness Quality, Access Quality, Credibility Quality, Professional Knowledge Quality, and Competence Quality, meaning the six dimensions are not important to preschools and the preschools’ performances are also not good in these six dimensions. Thus, preschools do not need to do more in these six dimensions. The high importance but low performance of service qualities is Reliability Quality, and it shows this dimension is important to preschools, but preschools’ performance is not good in this dimension. Thus, preschools should do more to improve this service quality.

### Table 1: Results of analysis of importance and performance of service qualities

<table>
<thead>
<tr>
<th>Construct</th>
<th>Performance</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>1. Tangibles Quality</td>
<td>5.5027</td>
<td>.7516</td>
</tr>
<tr>
<td>2. Reliability Quality</td>
<td>5.7688</td>
<td>.74976</td>
</tr>
<tr>
<td>5. Communications Quality</td>
<td>5.9737</td>
<td>.61013</td>
</tr>
<tr>
<td>6. Credibility Quality</td>
<td>5.7063</td>
<td>.76980</td>
</tr>
<tr>
<td>7. Security Quality</td>
<td>5.8720</td>
<td>.73127</td>
</tr>
<tr>
<td>8. Professional Knowledge</td>
<td>5.7024</td>
<td>.77546</td>
</tr>
<tr>
<td>10. Competence Quality</td>
<td>5.5000</td>
<td>.68172</td>
</tr>
<tr>
<td>Total</td>
<td>5.7785</td>
<td>.51368</td>
</tr>
</tbody>
</table>

### Table 2: IPA results

<table>
<thead>
<tr>
<th>service quality</th>
<th>Performance (X-axis)</th>
<th>Importance (Y-axis)</th>
<th>quadrant</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall average</td>
<td>5.7785</td>
<td>6.3540</td>
<td></td>
<td>origin of coordinate is (5.7785, 6.3540)</td>
</tr>
<tr>
<td>1. Tangibles Quality</td>
<td>5.5027</td>
<td>6.2051</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
<tr>
<td>2. Reliability Quality</td>
<td>5.7688</td>
<td>6.4512</td>
<td>The second quadrant</td>
<td>high importance/low performance (not doing enough)</td>
</tr>
<tr>
<td>3. Responsiveness Quality</td>
<td>5.6438</td>
<td>6.0671</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
<tr>
<td>4. Access Quality</td>
<td>5.5610</td>
<td>5.9878</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
<tr>
<td>5. Communications Quality</td>
<td>5.9737</td>
<td>6.4222</td>
<td>The first quadrant</td>
<td>high importance/high performance (keep going)</td>
</tr>
<tr>
<td>6. Credibility Quality</td>
<td>5.7063</td>
<td>6.2313</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
<tr>
<td>7. Security Quality</td>
<td>5.8720</td>
<td>6.6098</td>
<td>The first quadrant</td>
<td>high importance/high performance (keep going)</td>
</tr>
<tr>
<td>8. Professional Knowledge</td>
<td>5.7024</td>
<td>6.3512</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
<tr>
<td>9. Courtesy Quality</td>
<td>5.9316</td>
<td>6.3932</td>
<td>The first quadrant</td>
<td>high importance/high performance (keep going)</td>
</tr>
<tr>
<td>10. Competence Quality</td>
<td>5.5000</td>
<td>5.8500</td>
<td>The third quadrant</td>
<td>low importance/low performance (nothing need to be down)</td>
</tr>
</tbody>
</table>
DISCUSSION, CONCLUSIONS, AND RECOMMENDATION

The objectives of this study are to develop the service quality dimensions of preschools based on the service quality assessment of the PZB Model, to identify the connotation of all service quality dimensions by referring to the relevant literature, and then to conduct statistical analysis of the data acquired from the questionnaires concerning preschools’ teachers through stratified sampling. The study is designed to: 1) understand what are the important service quality dimensions for preschools; 2) which service quality dimensions with good performance should preschools maintain; 3) which service quality dimensions have high importance but poor performance that preschools should immediately enhance and improve; and 4) which service quality dimensions have low importance but good performance, indicating that preschools are spending undue efforts in unimportant areas and need to adjust the direction. According to the results of the statistical analysis, the obtained results are as follows.

According to the PZB Model, the service qualities of preschools can be measured from 10 dimensions: Tangibles Quality, Reliability Quality, Responsiveness Quality, Access Quality, Communications Quality, Credibility Quality, Security Quality, Professional Knowledge Quality, Courtesy Quality, and Competence Quality. The research results find that in teachers’ opinion, the most important service quality dimension among these 10 is Security Quality, the second is Reliability Quality, and the third is Communication Quality. This shows that protecting the security of children and providing them with a safe learning environment encompass the most important service dimension. This result is consistent with the research finding of Sheu (2010). This study demonstrates that the service dimension which preschool parents most fervently hoped the preschools to perform well in is “preschools place great alertness on the security of children, reassuring parents”. Chen (2008) also found that preschool parents placed considerable emphasis on whether the preschools can provide healthy and safe meals. Therefore, it is
obvious that security issues are the service quality to which parents pay great attention. In recent years a number of security incidents have taken place on school campuses in Taiwan, such as gangsters intruding onto the campus and committing crimes as well as wanton murder of innocent children (China Times, 2016). Furthermore, food safety issues have often been covered in newspaper (Liberty Times, 2014). Perhaps, these events and parents’ emphasis on these aspects have caused preschool operators and teachers to improve campus security and to regard the security of children as the top priority.

Whether parents’ trust is obtained is also very important in teachers’ minds. If the preschools can win the full trust of parents, then teachers can give fuller play to their professional ideas without interference or misunderstanding in teaching, curriculum, classroom management, problem guidance, and student handling. Chen (2008) also found among preschools’ service qualities that what parents valued most is reliability. In other words, preschools must be worthy of the trust of parents. This finding is similar to the concept of Reliability Quality in this study, indicating that parents place a high value on Reliability Quality, and that teachers also believe Reliability Quality has great importance. In this study, teachers believe that Communication Quality is behind only Security Quality and Reliability Quality as the 3rd most important service quality dimension. This is consistent with the findings of Cassidy et al. (2005), who suggested that good teacher-student interaction is key to classroom quality in preschools and also is an important service quality for preschools. This indicates that if teachers can maintain adequate communication with parents and have sound interaction quality, then families and schools can make joint efforts to educate children with the same ideas.

In the 10 service quality dimensions, preschools have the best performance in Communications Quality, the second is Courtesy Quality, and the third is Security Quality. This shows preschools spend a lot of effort on these three service qualities, contributing to a higher outstanding performance than other service quality dimensions. However, the results of this study illustrate that teachers do not think that preschools’ actual performance in these service quality dimensions match the assessment of importance. This indicates that preschools still need to put forth more effort to improve the performance level in these service quality dimensions.

How should preschools effectively enhance their service quality? In accordance with the IPA results of this study, the following knowledge can be gained. First, Communications Quality, Security Quality, and Courtesy Quality are the three most important dimensions to preschools and the preschools’ performances in them are good. Thus, preschools should maintain the quality of these services. Second, Reliability Quality is important to preschools, but their performances in this dimension is not good, which means that preschools are not providing enough of this service to parents and students, and so they should do more to improve this service quality. Third, Tangibles Quality, Responsiveness Quality, Access Quality, Credibility Quality, Professional Knowledge Quality, and Competence Quality have low importance and low performance in preschools’ service quality, and so preschools do not need to put any more effort on these six dimensions of service qualities. Finally, because no service dimensions are located in the fourth quadrant (where the service dimension is not important, but preschools’ performance is good and also indicates that preschools already provide too much of such a service quality), we note that preschools in Taiwan do not provide too much of any service dimension that is deemed to be not important.

According to the results of this study, the researcher suggests that preschool operators and administrators should find a way to improve the Reliability Quality of the preschools to earn parents’ trust and reliability, which should benefit their service quality. At the same time, they also have to pay more
attention to maintain their Communications Quality, Security Quality, and Courtesy Quality in order to maintain their good service quality. The researcher hopes these results herein can provide preschools with suggestions on how to improve their service quality and expects this study to also be a reference for other countries. Hopefully in the future, more findings from different countries can come about concerning this important issue.

REFERENCES


