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Article in African journal of business management · July 2011

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Full Length Research Paper

Integration SERVQUAL model and performance control matrix to improve service quality for the hot spring industry

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Accepted April 11, 2011

The study addresses this deficiency by integrating the SERVQUAL model theory and the performance control matrix to establish a more comprehensive assessment model for improving specific quality attributes. The study applies this integrated measuring instrument to a Taiwanese hot spring industry, using a questionnaire survey that allows employees to assess ‘importance’ and ‘satisfaction’ in their capacity as ‘internal customers (employees)’ of the industry. The study identifies quality attributes that require improvement, and then applies the ‘Employee Satisfaction Index (ESI)’ to determine the priority of these items for improvement. The study finds that the complete performance assessment systems, salaries, job security, and so on, are the seven items most in need of improvement to ensure employees’ satisfaction.

Key words: Employee satisfaction index (ESI), performance evaluation matrix, service quality, SERVQUAL model.

INTRODUCTION

To sustain competitiveness and long-term profitability, businesses devote themselves not only to attracting new customers, but also retaining old customers with a view to a continuing business relationship, whereby customers incrementally increase purchases and maintain loyalty (Gorst et al., 1998). Businesses therefore pursue product and service quality in order to satisfy their customers (Yang, 2005). Excellent service quality and high customer satisfaction are the important issues and challenges for service industries (Hung et al., 2003). Today, service quality is considered as a critical measure of organizational performance and continues to compel the attention of managers and academics (Lassar et al., 2000; Yavas and Yasin, 2001). Studies on service quality have extensively examined service quality measurement to help superiors effectively manage service quality delivery (Parasuraman et al., 1988; Babakus and Boller, 1992; Bolton and Drew, 1991; Cronin and Taylor, 1992; Yang, 2007). Most businesses agree that service quality provided to their target customers, affects global business performance to some degree and becomes a crucial business strategy (Hung et al., 2003). In the absence of objective measures, businesses must rely on consumers’ perceptions of service quality to identify their strengths/weaknesses, and design appropriate improvement strategies. This makes development of psychometrically sound and managerially useful instruments to measure service quality imperative (Karatepe et al., 2005). Therefore, customer satisfaction must be translated into a number of measurable models to evaluate customer satisfaction level and organizational operating efficiency (Deschamps and Nayak, 1995).

Most businesses focus on customer satisfaction when undertaking surveys of satisfaction and dissatisfaction (Comm and Mathaisel, 2000), while generally neglecting employee satisfaction. This is despite the fact that many studies have established that employees are the ‘internal

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customers' of a firm and that satisfied employees equate with satisfied end-customers (Nebeker et al., 2001); indeed, employee satisfaction has a great influence on organizational performance as does customer satisfaction. Employees are the internal customers of the business; they satisfy current working environment and are willing to cooperate with the business to accomplish business goals. Hence, another factor worthy of consideration in quality-improvement models is the level of employee satisfaction. Employee job satisfaction has been shown to be one of the best predictors of turnover (Lee, 1988), and it can influence customers' perception of service quality (Rafaeli, 1989; Chen et al., 2006). A number of studies found a positive relationship between employee satisfaction, customer satisfaction and company performance (Homburg and Stock, 2004, 2005). Additionally, recent research has shown that employee satisfaction can be linked to customer satisfaction (Tompkins, 1992; Tornow and Wiley, 1991; Weaver, 1994). Most studies highlight customer satisfaction, while generally neglecting employee satisfaction. Therefore, this study uses SERVQUAL model theory and the performance evaluation matrix, as well as a questionnaire on employee satisfaction in the hot spring industries to analyse the employee satisfaction.

Many service quality models help business executives to detect improvement in service items (Hung et al., 2003), but the models remain incomplete. In particular, some models are unable to effectively prioritize improvement goals (Lewis, 1993; Chen et al., 2006). Businesses generally determine enhancement priorities based on the low satisfaction attributes, rather than considering actual customer requirements (Yang, 2003b). Although this approach improved some dissatisfied quality attributes, these attributes are not the focuses of customers. Scholars often applied many indices to build performance measurement models. On the basis of this introductory discussion, the present study analyses a service-quality model that takes into account, both expectation (importance) and satisfaction (perception) (that is, the SERVQUAL model and the performance evaluation matrix); in addition, the study utilises a survey of employee satisfaction in a hot spring industry to analyse the model. The study identifies quality attributes that require improvement, and then applies the ‘employee satisfaction index’ (ESI) to determine these items’ priority for improvement.

LITERARURE REVIEW

Evaluating content of employee satisfaction

Employees’ job satisfaction has become a critical issue in the last two decades. A number of studies found a positive relationship between employee satisfaction, customer satisfaction and company performance (Homburg and Stock, 2004; 2005). More research in recent times has shown that employee satisfaction can be linked to customer satisfaction (Tompkins, 1992; Tornow and Wiley, 1991; Weaver, 1994). Other scholars have shown a relationship between a company’s financial success and its commitment to management practices that treat people as assets (Pfeffer and Veiga, 1999). Linking information from employee opinion surveys to important organizational outcomes is one area of potential value. When elements of an organization’s work environment can be shown to relate to important performance outcomes, these elements can be used to give a business a competitive advantage (Nebeker et al., 2001). In past studies, companies frequently used employee surveys to assess job satisfaction and affective commitment. Therefore, satisfied employees tend to show a higher level of loyalty and commitment to their companies and are unlikely to leave their jobs (Guimaraes, 1997). Indeed, successful service companies have invested resources into programmes in order to increase their employees' performance and job satisfaction.

Job satisfaction is defined as the overall sense of affection an employee has for the job situation. One of the most influential and most criticized works in this area is Herzberg’s two-factor theory of motivation (Herzberg et al., 1959). It distinguishes between factors that can increase job satisfaction (‘motivators’) versus those that can prevent dissatisfaction but do not lead to satisfaction (‘hygiene factors’). Motivator factors include a sense of achievement, recognition, job description itself, duty, personal growth, promotion development, and so on. Hygiene factors include company policy, administration management, supervision style, public relationship, working environment, salary, and benefits. Locke (1969) considers that job satisfaction is a positive or pleasant state of emotion that is derived from an employee’s self-evaluation regarding his/her job or working experience. Price (1997) indicates that employee satisfaction reflects that an employee has a positive emotional tendency to his or her work; employee satisfaction is often seen as work satisfaction. Therefore, a satisfied employee is the major premise in productivity upgrading, response capability, quality improvement and customer service (Kaplan and Norton, 1999). Employee satisfaction has been an important topic in psychology. High levels of worker absenteeism and leave, jeopardize a company’s achievement. Measures to assess the dimensions of employee satisfaction vary from industry to industry. Kalleberg (1977) reasons that employees sense affection and satisfaction from the following six dimensions: intrinsic reward of work; work convenience; financial (bonus) reward; worker relationship; promotion and career planning; and resource adequacy.

Comm and Mathaisel (2000) used SERVQUAL to conduct questionnaire surveys on 606 employees of a private higher education organization to identify the determinants of satisfaction within educational organizations.
The dimensions evaluated are: work load; work atmosphere; decision making/involvement; ethics/fair-mindedness; customer focus/communications; supervision; goals and objectives; training and development; pay; benefits.

Küskü (2001) proposed applying employee satisfaction surveys to the employees of a Turkish college, and measured their satisfaction by means of the following dimensions: general satisfaction, management satisfaction, colleagues, other working group satisfaction, job satisfaction, work environment and salary satisfaction. Metle (2003) conducted employment satisfaction surveys on female employees in the Kuwaiti public government sector (KGS), and identified the following employment satisfaction factors: overall job satisfaction, pay and security, co-workers, supervision, promotion and content of work. Chen et al. (2006) used satisfaction surveys for the employees of a Taiwanese higher education institution and applied the following six dimensions: organizational vision, respect, result feedback and motivation, management system, pay and benefits, and work environment. Chen et al. (2007) conducted satisfaction surveys for high-tech industry employees and applied the following five dimensions: work environment, pay and benefits, management systems, motivation, and organizational vision.

The factors influencing employee satisfaction are complicated, and a single model to analyse it has not yet been formulated. In addition to the research mentioned earlier, Maslow’s needs theory (1954) and Herzberg’s two-factors theorear also useful. These factors or dimensions affect employee satisfaction and employee satisfaction influences enterprises’ competitive advantage (Chen et al., 2007). Thus, this research constructs five dimensions to assess an employee’s satisfaction and they are: work environment; pay and benefits; management systems; motivation; organizational vision.

Conceptual framework of service quality

Service quality model

The SERVQUAL model (Parasuraman et al., 1988) has been widely used by service providers in various industries to assess key quality attributes with a view to devising strategies for quality improvement. The SERVQUAL instrument enables providers to ascertain perceived service quality by calculating a so-called ‘gap’ between customers’ expectations of the service they would receive and their perceptions of the service they actually receive (Parasuraman et al., 1989, 1991).

Apart from calculating overall perceived service quality, service providers can analyse the service-quality ‘gaps’ in regard to particular dimensions and items within the SERVQUAL model. This enables service providers to devise quality-improvement plans to enhance service quality and customer satisfaction in terms of particular quality attributes. However, as noted earlier, some authors have contended that a proper evaluation of service-quality performance requires an assessment of the importance attached to a quality attribute by customers in addition to an assessment of its influence on level of customer satisfaction (Hung et al., 2003). In general, the influence of a quality attribute on customer satisfaction is closely related to the degree of importance attached to it by customers (Kristensen et al., 1992). Nevertheless, Yang (2003a) and Hung et al. (2003) have argued that this relation does not always hold true, and they have therefore proposed that customers’ views on the importance of service elements should be combined with customers’ perceptions of satisfaction to determine the levels of customer service quality. Indeed, many Taiwanese businesses have begun to assess both importance and satisfaction, rather than relying on satisfaction alone to analyse service quality.

Performance evaluation matrix

A performance matrix has been proposed to determine the best strategy for improving service quality and the level of satisfaction of customers or employees. The performance matrix consists of nine zones that represent the effectiveness of various system-improvement items (Lambert and Sharma, 1990). The performance matrix is illustrated in Figure 1 and the service strategy in Table 1. The performance evaluation matrix has been widely used by service providers in various industries to assess key quality attributes with a view to devising strategies for quality improvement (Chen et al., 2007). It is an excellent service quality evaluation method for managers seeking to determine the best improvement strategies (Yang and Chen, 2010).

Establishment of performance control matrix and employee satisfaction index

Hung et al. (2003) and Chen et al. (2008) have proposed a system of standardization to establish a similar performance matrix for evaluating operation performance in the semiconductor industry. Chen et al. (2007) utilised the indicators of ‘importance’ and ‘satisfaction’ to establish an ‘importance index’ (PI) and a ‘satisfaction index’ (PS) to improve service quality for employees in the higher education sector. In what follows, the random variable, I, denotes importance in the x-axis, whereas, S denotes satisfaction in the y-axis. A k-point scale is adopted to evaluate the importance and satisfaction of each item (generally, k is equal to a 5-point scale). The indices of importance (P_I) and satisfaction (P_S) are then defined as follows:

\[
P_I = \frac{x_i - \text{min}}{5}
\]  \hspace{1cm} (1)

\[
P_S = \frac{x_S - \text{min}}{5}
\]  \hspace{1cm} (2)
Figure 1. Performance evaluation matrix (Source: Lambert and Sharma, 1990).

Table 1. Service strategy of the performance evaluation matrix.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Service strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>High importance, high performance</td>
<td>Maintain or improve service quality</td>
</tr>
<tr>
<td>High importance, medium performance</td>
<td>Improve service quality</td>
</tr>
<tr>
<td>High importance, low performance</td>
<td>Definitely service quality</td>
</tr>
<tr>
<td>Medium importance, high performance</td>
<td>Reduce or maintain service quality</td>
</tr>
<tr>
<td>Medium importance, medium performance</td>
<td>Maintain service quality</td>
</tr>
<tr>
<td>Medium importance, low performance</td>
<td>Improve service quality</td>
</tr>
<tr>
<td>Low importance, high performance</td>
<td>Reduce or maintain service quality</td>
</tr>
<tr>
<td>Low importance, medium performance</td>
<td>Reduce or maintain service quality</td>
</tr>
<tr>
<td>Low importance, low performance</td>
<td>Maintain service quality</td>
</tr>
</tbody>
</table>


\( P_I \): index of importance; \( P_S \): index of satisfaction; \( \bar{X}_I \): mean of importance; \( \bar{X}_S \): mean of satisfaction; \( min \) = the minimum value of the \( k \) scale; \( R \) = the full range of the \( k \) scale = 5.

Hung et al. (2003) and Lin et al. (2006) proposed the performance matrix and adopted the ‘control chart’ of the Montgomery (1991) method. The performance matrix limits its range to the area within two bold lines to obtain the new ‘performance control matrix’ (Figure 2). Using these indices, service-quality items are mapped onto the performance control matrix. The two bold diagonal lines in the performance matrix indicate the limits of the performance control zone (Zone A: ‘maintain zone’). Attributes within this zone can be maintained in accordance with the present situation. The limits of this zone are determined by the diagonal lines labelled as the ‘performance upper control limit’ (PUCL) and the ‘performance lower control limit’ (PLCL), which are established according to the coordinates. The broken diagonal line represents the ‘performance control centre limit’ (PCCL). The values represented by these lines enable objective diagnosis of the situation and considered judgment of any improvements that may be required.

In identifying items for improvement, managers need attend only to items that are located outside the PUCL and PLCL control lines. Service-quality items that fall into the bottom-right zone (Zone X: ‘improvement zone’) have greater importance than satisfaction; quality attributes in this zone therefore require more resources to be invested to improve satisfaction. Conversely, items that fall into the upper-left zone (Zone Y: ‘excellent zone’) have less importance than satisfaction; quality items in this zone require fewer resources to be invested to prevent waste. Generally, few items fall into the ‘excellent zone’.

Different coordinates \([P_I, P_S]\) of performance indices form different positions. First, the control chart was defined as the performance control line, and the target
value (T) was set at T = 0. The performance matrix limits should be adjusted in accord with business resources. The closer the performance control matrix limits approach PCCL, the more the items of service quality which fell outside of the performance control matrix limits should be improved; consequently, the business should invest in more resources. Usually, the performance matrix limits were set to $T \pm \sigma$, $T \pm 2\sigma$ and $T \pm 3\sigma$. However, generally, the $T \pm 3\sigma$ was used to establish the PUCL and PLCL. The limits can also be set at $T \pm \sigma$ or $T \pm 2\sigma$, depending on particular circumstances.

The questions on quality attributes appearing in the questionnaire are designed from the customers' points of view. Suppose the study has N quality attributes in the questions, $c_i$ is the satisfaction index ticked by the customer, and $w_i$ is the weight of attribute $i$. Yang (2003a) proposed that the customer satisfaction index (CSI) could be represented by the weight-average, given thus:

$$CSI = \sum_{i=1}^{N} \bar{w}_i \bar{c}_i$$  \hspace{1cm} (3)

This study requires that the customer satisfaction index (CSI) of each quality attribute be calculated; therefore, this study, based on Yang’s (2003a) theory, has modified the customer satisfaction index to become the employee satisfaction index (ESI), given thus:

$$ESI = \sum_{i=1}^{n} \bar{I}_i \bar{S}_i$$  \hspace{1cm} (4)

$\bar{I}_i$: mean of importance of $i$; $\bar{S}_i$: mean of satisfaction of $i$

The ESI’s value is given thus:

$$ESI_i = \bar{I}_i \times \bar{S}_i$$  \hspace{1cm} (5)

In order to raise the value of ESI, industries must implement the improvement measures, although they cannot improve performance for all the quality attributes. They might choose to focus on some quality attributes that would more effectively result in quality improvement, since they understand that improvement effectiveness is based on the quality attribute’s importance in relation to improved performance.

EMPIRICAL STUDY

Questionnaire design and structure

Although many studies have utilised customer surveys to assess satisfaction, few have used surveys of employees. The present study adopts the attitude that employees are ‘internal customers’ of the industry; as such, the study developed a questionnaire seeking data on employee satisfaction and employee perceptions of importance with respect to a series of quality attributes in a hot spring industry. To assess employee satisfaction and perceptions of importance in any industry, the requirements of the employees must first be determined. Different industries have different business cultures and different employee requirements (Yang, 2003a; Chen et al., 2006). The present dimensions and questionnaire were therefore based on: (i) a review of the literature (Fosam et al., 1998; Comm and Mathaisel, 2000; Küskü, 2001; Chen et al., 2006, 2007;
Yang and Chen, 2010); (ii) discussions with five experts (including human resources management consultants); and (iii) discussions with 20 employees in a hot spring industry. This led to the listed dimensions being used in the questionnaire:

1. Work environment (four items).
2. Pay and benefits (seven items).
3. Management systems (nine items).
4. Motivation (four items).
5. Organizational vision (four items).

The final questionnaire was divided into three parts, and they are:

i. Demographics: gender, age, qualifications, and years of service;
ii. Importance survey: responses requested on a Likert-type scale of 1 to 5 (with 1 representing 'extremely unimportant' and 5 representing 'extremely important');
iii. Satisfaction scale: responses requested on a Likert-type scale of 1 to 5 (with 1 representing 'extremely dissatisfied' and 5 representing 'extremely satisfied').

### Demographics of sample

Taiwan is famous for its scenery, as its alternative name Formosa ("beautiful island") indicates, even though its natural resources are limited. However, the hot spring of Taiwan is famous throughout all of Asia. Taiwan's Shei-Pa National Park, located in Tai-An of Miaoli County, ranks among the top ten most popular tourism sites; it is famous for its hot spring. The survey questionnaire was distributed randomly from January to March 2009 to all customers of the Tai-An hot spring industry in Taiwan. In all, 550 questionnaires were distributed and 342 were returned (a response rate of 62.18%). Among the returned questionnaires, 13 were incomplete and therefore discarded; this left 329 questionnaires for analysis. The demographics of the final sample are shown in Table 2. The majority of respondents (56.53%) were female, and most (46.2%) were aged 30 to 39 years. Almost half (52.58%) had only completed college/university, but a little more than half (33.13%) had completed high school. The majority (48.32%) had been in their present employment from 4 to 10 years.

### Reliability and validity of the questionnaire

Reliability was assessed by Cronbach's alpha using SPSS software. Cronbach's alpha for 'employee importance' was 0.945 and for 'employee satisfaction', it was 0.918. The values for individual dimensions are shown in Table 3. All exceeded the suggested criterion of 0.7 (Culiford, 1965). These results demonstrate that the questionnaires were extremely reliable. In terms of validity, the questionnaire had been designed on the basis of related studies, consultation with service-quality professionals and consultants, and discussions with employees. The questionnaire thus had high reliability and validity.

### RESULTS OF PERFORMANCE CONTROL MATRIX

The index of importance and index of satisfaction of the 28 items are shown in Table 4. The standard deviation ($\sigma$) in the performance control matrix was 0.0984. Because the study had set the PUCL and PLCL limits at ±3 standard deviations, the PUCL was 0.2952 and PLCL was -0.2952. If an overall index value was outside the limits of ±0.2952, such an item was referred to as an 'abnormal item'. These coordinates were mapped onto the performance control matrix (Figure 3). The abnormal coordinates outside PUCL and PLCL were located after drawing the control lines. No items were identified outside the PLCL; that is, no items fell into the 'excellent zone'. Items found outside PUCL were items 5, 6, 7, 13, 19, 20, and 21. This indicated that resources should be increased for these items to promote employee satisfaction. Other items fell into the 'maintain zone'; attributes within this zone can be maintained in accordance with the present situation.
Table 3. Reliability for the five dimensions of questionnaire.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Cronbach's alpha</th>
<th>Importance survey</th>
<th>Satisfaction survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work environment</td>
<td>0.836</td>
<td>0.810</td>
<td></td>
</tr>
<tr>
<td>Pay and benefits</td>
<td>0.908</td>
<td>0.882</td>
<td></td>
</tr>
<tr>
<td>Management systems</td>
<td>0.921</td>
<td>0.909</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>0.841</td>
<td>0.816</td>
<td></td>
</tr>
<tr>
<td>Organization vision</td>
<td>0.807</td>
<td>0.797</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.945</td>
<td>0.918</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Survey results of performance control matrix.

<table>
<thead>
<tr>
<th>S/No.</th>
<th>$\bar{x}_i$</th>
<th>Ranking</th>
<th>$\bar{x}_i$</th>
<th>Ranking</th>
<th>$P_i$</th>
<th>$P_S$</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.89</td>
<td>17</td>
<td>3.88</td>
<td>3</td>
<td>0.723</td>
<td>0.720</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>2</td>
<td>3.61</td>
<td>26</td>
<td>3.58</td>
<td>12</td>
<td>0.653</td>
<td>0.645</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>3</td>
<td>3.81</td>
<td>22</td>
<td>3.57</td>
<td>13</td>
<td>0.703</td>
<td>0.643</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>4</td>
<td>4.06</td>
<td>13</td>
<td>3.79</td>
<td>7</td>
<td>0.765</td>
<td>0.698</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>5</td>
<td>4.91</td>
<td>1</td>
<td>2.82</td>
<td>28</td>
<td>0.978</td>
<td>0.455</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>6</td>
<td>4.75</td>
<td>5</td>
<td>3.11</td>
<td>26</td>
<td>0.938</td>
<td>0.528</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>7</td>
<td>4.82</td>
<td>4</td>
<td>3.38</td>
<td>19</td>
<td>0.955</td>
<td>0.595</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>8</td>
<td>4.05</td>
<td>14</td>
<td>3.85</td>
<td>4</td>
<td>0.763</td>
<td>0.713</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>9</td>
<td>3.89</td>
<td>18</td>
<td>3.89</td>
<td>2</td>
<td>0.723</td>
<td>0.723</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>10</td>
<td>3.99</td>
<td>15</td>
<td>3.61</td>
<td>11</td>
<td>0.748</td>
<td>0.653</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>11</td>
<td>3.82</td>
<td>21</td>
<td>3.80</td>
<td>6</td>
<td>0.705</td>
<td>0.700</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>12</td>
<td>3.79</td>
<td>23</td>
<td>3.68</td>
<td>9</td>
<td>0.698</td>
<td>0.670</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>13</td>
<td>4.66</td>
<td>6</td>
<td>3.29</td>
<td>20</td>
<td>0.915</td>
<td>0.573</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>14</td>
<td>4.57</td>
<td>8</td>
<td>3.44</td>
<td>17</td>
<td>0.893</td>
<td>0.610</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>15</td>
<td>4.25</td>
<td>10</td>
<td>3.92</td>
<td>1</td>
<td>0.813</td>
<td>0.730</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>16</td>
<td>3.86</td>
<td>20</td>
<td>3.67</td>
<td>10</td>
<td>0.715</td>
<td>0.668</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>17</td>
<td>4.16</td>
<td>12</td>
<td>3.78</td>
<td>8</td>
<td>0.790</td>
<td>0.695</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>18</td>
<td>3.95</td>
<td>16</td>
<td>3.39</td>
<td>18</td>
<td>0.738</td>
<td>0.598</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>19</td>
<td>4.62</td>
<td>7</td>
<td>3.13</td>
<td>23</td>
<td>0.905</td>
<td>0.533</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>20</td>
<td>4.87</td>
<td>3</td>
<td>3.24</td>
<td>21</td>
<td>0.968</td>
<td>0.560</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>21</td>
<td>4.89</td>
<td>2</td>
<td>3.12</td>
<td>24</td>
<td>0.973</td>
<td>0.530</td>
<td>Improvement zone</td>
</tr>
<tr>
<td>22</td>
<td>4.38</td>
<td>9</td>
<td>3.82</td>
<td>5</td>
<td>0.845</td>
<td>0.705</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>23</td>
<td>4.21</td>
<td>11</td>
<td>3.46</td>
<td>16</td>
<td>0.803</td>
<td>0.615</td>
<td>Maintain zone</td>
</tr>
<tr>
<td>24</td>
<td>3.89</td>
<td>19</td>
<td>3.08</td>
<td>27</td>
<td>0.723</td>
<td>0.520</td>
<td>Maintain zone</td>
</tr>
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Calculating employee satisfaction index to determine improvement priority

Generally, if an organization possesses abundant resources, general improvement can be made; however, if resources are limited and only a few items can be improved, some items have to be selected as priorities (Chen et al., 2006). The improvement items should be a priority for improvement. Because the resources of most businesses are limited, the seven items cannot usually be simultaneously improved to the required level. It is necessary to determine priorities for improvement. Therefore, the study calculates the employee satisfaction index to determine improvement priorities. The ESI values are shown in Table 5. The smaller the ESI, the greater the priority that quality attributes improves. The quality attributes which employees consider highly important and which have a lower satisfaction level are those that management need to address as a first priority for improvements. The study applies ESI to determine...
improvement priorities as given thus:

1. Provision of good salaries.
2. Provision of complete performance assessment system.
3. Provision of a flexible working system.
4. Provision of job security.
5. Provision of a generous annual bonus.
6. Provision of fair promotion systems.
7. Provision of good retirement arrangements.

DISCUSSION AND ANALYSES

This study reveals seven items that must be improved. Because the resources of the business are limited, the seven items cannot be improved simultaneously and completely; thus, it is necessary to set priorities for improvement. Further discussion lists details of the top three items that require improvement. The first improvement priority is the quality attribute of ‘provision of good salaries’ (No. 5). The employees focus on salaries, and...
generally, ignore other relevant welfare and work environment benefits provided by the industry; they even randomly job-hop. This has clearly raised expectations and many employees apparently feel that the current salary structure is not sufficiently generous. Firms that wish to enhance satisfaction among their employees should make it a priority to ensure that management and employees are agreed on the fairness of the salary arrangements. The second improvement priority item is 'provision of complete performance assessment system' (No. 19). The performance assessment system provides the basis for increase in salary, and consequently, this item is strongly related to monetary value. This performance assessment system is excessively subjective. Therefore, the employees consider the performance assessment system unfair. The third improvement priority item is 'provision of a flexible working system' (No. 6). The hot spring industry belongs to the tourism industry; therefore, industry employees must work on holidays. The employees hope for the establishment of a flexible working system that would benefit their family life.

Conclusions

Quality is the most important prerequisite for satisfying customers/employees and ensuring the competitiveness of an organization. Excellent service quality and high satisfaction level are important for a company's customers/employees. Scholars have developed many quality improvement models to improve inadequate service quality. Several quality-improvement models have been developed to enable service providers to correct deficiencies in the service quality they offer. However, most models have relied solely on assessments of satisfaction with particular items and have thus failed to take into account the relative importance of various quality attributes in shaping perceptions of satisfaction. This causes difficulties for providers in assessing priorities for improvement. The present study has addressed this deficiency by integrating the SERVQUAL model and the modified 'performance control matrix' to provide a more comprehensive assessment model for improving specific quality attributes. With the aid of a questionnaire survey, the study has applied the integrated measuring instrument to a Taiwanese hot spring industry to analyse employees' assessment of 'importance' and 'satisfaction' in their capacity as 'internal customers' of the company.

Using this methodology, the study has identified seven items as being of priority for improvement, and five items as being of secondary priority. These findings are significant for service providers because they take into account: (i) the relative importance of quality attributes; (ii) the relative satisfaction level of these attributes; and (iii) the resources available for improvement. Business resources are always limited, and providers must therefore devise appropriate improvement strategies to improve service quality while containing costs and thus ensuring a viable competitive advantage. The study identifies quality attributes that require improvement then applies the 'employee satisfaction index (ESI)' to determine the priority of these items for improvement. The present study has demonstrated that the performance control matrix and the employee satisfaction index, taken together, provide an excellent measuring instrument for assessing priorities for quality improvement.

ACKNOWLEDGEMENT

The author would also like to thank the National Science Council in Taiwan, R.O.C. for financially supporting this study in 2010 (Number: NSC 99-2221-E-412-001).

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