Promoting Service Quality with Employee Empowerment in Tourist Hotels: The Role of Service Behavior

Sheng-Hshiung Tsaur,* Hsin-Mei Chang∗∗ and Cheng-Shiung Wu∗∗∗

(received January 2003; revision received May 2003; accepted December 2003)

Abstract

Although some prior studies have discussed the relationship between employee empowerment and service quality, this study is the first empirical study to examine how service behavior mediates the relationship between employee empowerment and service quality in the tourist hotel. To link the viewpoints of organization and customer and appropriately reflect the true relationships among dimensions, we measure the dimensions of employee empowerment and service behavior from the employees’ viewpoint, and the service quality dimension from the customers’ viewpoint. The results indicate that the more empowerment the employees perceive, the better service quality customers perceive. In addition, the findings reveal that the relationship between employee empowerment and service quality exert a mediating effect. Implications for managerial practice and directions for further research are discussed.

Keywords: Employee empowerment; Service quality; Service behavior; and Tourist hotel

1. Introduction

Delivering quality service is considered an essential strategy for success and survival in today’s competitive environment [15,58]. The special feature of a service industry is the contact and interaction between service providers (employees) and service acceptors (customers). The quality of the service encounter plays an important role for the operation practice of a corporation. Therefore, how to provide better service and retain customers is the key to competitiveness.

Jacobson and Aaker [28] fingered out that if it could generate higher level of customer satisfaction and loyalty for organization by offering higher
level of service quality to gain more profit. Factually, customer’s satisfaction may only be dependent upon his or her perception about service quality in service encounter [51]. For meeting various demands of customers, employees of service industries should not only behave according to the basic rules and regulations, but also offer expeditious and efficient service to meet customers’ satisfaction. In order to achieve the above objective, how to empower employees with appropriate discretion on their job has become an important issue in the service industry.

The tourist hotel is a typical service industry, offering individual services for tourists. Besides the physical facility, customers’ needs include the various service provided by employees. Under keen competition in tourist hotel industry, how employees offer the best service to customers has become the most important issue for hotel administrators. Due to the intangibility of services and the heterogeneous characteristics of tourist hotels, hotelkeepers must design their own systematic standards of procedure for employees. However, supervisors cannot control the service delivery process too rigidly, because employees need to retain adequate flexibility to satisfy customers within their discretion. From the viewpoint of managerial practice, those hotels, which emphasize individual service, have adopted employee empowerment as a principal credo, so that employees can identify customers’ needs promptly and take the initiative to satisfy them.

In the past, a few studies have directly discussed the relationship between employee empowerment and service quality. Sparks, Bradley and Callan [52] reported that employees who are fully empowered and communicate with customers in attentive manner could evoke more customer satisfaction. Hocutt and Stone [27] pointed out that if employees could perform with responsiveness and enthusiasm, then customers would be more satisfied in the process of service recovery. In the above studies, the major premise was that service failure had happened. In addition, the authors discussed the satisfaction toward employee empowerment from the viewpoint of the customer, not that of the employee, and empowerment was defined merely as the degree of employee self-determination, which neglected the possible influences caused by healthy environment of empowerment.

The empowered employees might show the customer-oriented service behavior, because they possess more elasticity and capability to match the changeable need of customers [48]. Farrell, Souchon and Durden [18] indicated that customers’ perceptions of service quality would be based almost
entirely upon the service behaviors of employees. Customers specially appreciate the service encounter while measuring service quality, therefore service behaviors of employees reveal more important in the service delivery process [41]. Consequently, in service encounters, the empowered employees would present appropriate and flexible service behaviors towards customers, and customers’ perceptions of service quality could be improved through the service behaviors of customer-contact employees.

Notwithstanding, most previous researches [27,52] referred to the measurement of employee empowerment and explore the degree of employee empowerment from the customers’ respective, so as to examine the relationship between employee empowerment and service quality. However, it could not measure the recognition of employee empowerment objectively and strictly from customers’ perceptions. Besides, from a purely practical point of view, the inter-connections among employee empowerment, service behavior and service quality may be intuitively appealing.

The current literature indicates a lack of research on the effect of service behavior on the relationship between employee empowerment and service quality. Whether the relationship between employee empowerment and service quality is mediated by service behavior is an issue that deserves to be examined. In other words, through the positive service behavior delivered by empowered employees, the customers’ perception of service quality may be improved. Or perhaps, certain aspects of service behavior may disturb the relationship between employee empowerment and service quality. Particularly in the tourist hotel industry, hotelkeepers lay great emphasis on “employee empowerment,” “service behavior,” and “service quality” for promoting customers satisfaction; consequently, we adopt the tourist hotels as an object to conduct an empirical study.

In this paper, we examine and test the relationship between employee empowerment and service quality in tourist hotels, and the complementary role of the service behavior. Yet, past researches had not been conducted for linking the service behavior performed by service providers and the service quality recognized by customers. Therefore, for linking the viewpoints of organization and customer and reflecting the true relationships among dimensions appropriately, we measure the dimensions of employee empowerment and service behavior from the employees’ cognition aspect, and the service quality dimensions from the customers’ aspect.
2. Literature Review and Hypotheses

2.1 Employee Empowerment Versus Service Quality

The firms must rely on the ability and motivation of their service providers to deliver high quality service [20]. Zemke and Schaaf [60] found that many famous enterprises, including U.S. Air and Federal Express, applied employee empowerment to improve customer satisfaction, and they defined employee empowerment to mean endowing the front-line employees with power and encouraging them to demonstrate their imagination and creativity. That is, to permit customer-contact employees to do the right things [14] and endow them with more power to deal with customers’ problems immediately [16,49,50]. Cook, Sue, Toby and Peter [12] supposed that empowerment means managers encourage employees to act on their own initiative and concede them flexible space to make judgments by themselves. Supervisors release the various controls in the service delivery process, and encourage the customer-contact employees to exercise their discretion so as to make decisions in a timely fashion and thereby satisfy customers’ needs.

Parasuraman, Zeithaml and Berry [43] indicated that the critical factor of service quality is cognition of consumers, not of managers, so that the service quality is a total experience that can only be evaluated by the consumers. Lehtinen and Lehtinen [38] divided service quality into “process quality” and “outcome quality.” The process quality reflects consumers’ judgment about the service level in the process of service delivery; the outcome quality was consumers’ assessment of service consequence. Regarding measurement of perceived service quality, Parasuraman, Zeithaml and Berry [42] proposed a “SERVQUAL” scale to measure the gap between consumers’ expectations and performance; the dimensions of service quality included tangibles, reliability, responsiveness, assurance and empathy. They found that SERVQUAL, thus defined, offers a reliable and valid measure of service quality with relatively stable dimensions across different service industries.

Hartline and Ferrell [24] stated that the use of employee empowerment could have both positive and negative consequences for customer-contact employees and the firm’s service quality. Because of the importance of self-efficacy in the employee-customer interface, the use of empowerment has positive outcomes. However, empowered employees could become frustrated in their attempts to balance role demands, which could lead to an
increase in role conflict for employees and service quality. Sparks, Bradley and Callan [52] explore the effects of employee empowerment (full, limited, and none) on customers’ satisfaction. Results revealed that fully empowered employees produce more customer satisfaction, but only when the service provider used an accommodating style of communication. Hocutt and Stone [27] investigated the effects of frontline employee empowerment in a service recovery situation. The results revealed that if employees were properly trained and given autonomy to make decisions, then service recovery efforts would be maximized, thus leading to higher consumer satisfaction.

In summary, employee empowerment should make an important contribution to service quality. Here customer-contact employees are given a higher level of employee empowerment, customers are likely to have higher perceptions of service quality. Accordingly, we propose the following hypothesis:

Hypothesis 1: Higher employee empowerment would lead to higher levels of service quality in tourist hotels.

2.2 Employee Empowerment Versus Service Behavior

Service behavior could be identified as frontline employees serving customers with movements, voice and attitudes. During the service encounter, the employees’ emotions would be conveyed to customers through the contact with customers, and generate temporary effects on customers [13, 46]. Bettencourt and Brown [3] assumed that employees’ providing service to customers and making them feel comfortable could be termed service behavior, a kind of prosocial behavior.

Service behavior could be classified into role-prescribed service behavior and extra-role service behavior. The role-prescribed behavior refers to expected employees behaviors in serving the firm’s customers [3,7,32]. Expectations for these behaviors may derive from implicit norms in the workplace or from explicit obligations as specified in organizational documents such as job descriptions and performance evaluation forms. Preconceptions of role-prescribed service behavior may derive from the unwritten rules in working places, or may be listed explicitly in organizational documents, as job obligations in job description and role evaluation scales [3,7,45]. These behaviors include exhibiting common courtesy, demonstrating accurate knowledge of policies and products, addressing customers by name, greeting and saying “thank you” to customers, and cross-selling
the firm’s services. Marketing studies reinforce the importance of similar behavior for customer satisfaction, service quality perceptions, loyalty and sales performance [3,4,21,33,34,42].

Extra-role service behavior refers to discretionary behaviors of contact employees in serving customers that extend beyond formal role requirements. Recent marketing literature highlights the importance of contact employees “delighting” the customer by providing “little extras,” “extra attention,” and “spontaneous” exceptional service during the service encounter for customer satisfaction and positive emotional responses [3,4,44].

Scott, Susanne and Bruce [48] stated that empowered employees exhibit customer-oriented behaviors, because they become more flexible and adaptive in the face of changing customer needs. Hammuda and Dulaimi [23] demonstrated that empowerment benefited both employees and the organization, and could be used to reinforce the motivation, loyalty, satisfaction and creativity of employees. Therefore, the conditions of employee empowerment may affect the service behavior of customer-contact employees. Accordingly, we propose the following hypothesis:

Hypothesis 2: Higher employee empowerment would lead to better service behavior in tourist hotels.

2.3 Service Behavior Versus Service Quality

Service encounters involve interaction between customers and service providers [3,9,29,44,55,57], and customers’ perceptions of service quality would be almost completely based upon the behavior of employees [4, 18,41,42]. Employee behaviors represent the service delivery process, while customers’ assessments of service quality represent an evaluation of the service delivery process [21]. That is, service providers’ behaviors would influence customer evaluation of service encounters. So, the employees’ service behaviors will have an important role to play in influencing customers’ perceptions of service encounters.

The service encounter, or interaction between a service provider and customer, has received a lot of recent attention in the marketing and management literature [9,17,39,44]. However, understanding critical service behaviors is the focus of this research and is key to the attitudes of service providers to deliver service that will lead to satisfied customers. Bowen and Schneider [5] also indicated that the attitudes and behaviors of contact em-
ployees could significantly influence customers’ perceptions of the service, because the attitudinal and behavioral responses of employees are the primary determinants of customers’ perceptions of service quality. Bitner, Booms and Tetreault [4] showed through qualitative studies that customers are more satisfied with the service encounter when employees possess the ability, willingness, and competence to solve their problems.

Hartline and Jones [25] investigated the relationships among service quality, service value, and word-of-mouth for a hotel, and the results indicated that front desk, housekeeping, and parking employee performance had significant effects on perceived service quality of customers. Williams [56] explored the relationship between employee performance and service quality by taking the samples of employees and customers in hotels, and the findings indicated that employee performance would have a significant effect on customer perceived service quality. On the basis of the above, we propose the following hypothesis:

Hypothesis 3: Improved service behavior would lead to higher levels of service quality in tourist hotels.

2.4 The Role of Service Behavior

The interaction between customers and service providers has a substantial impact on customer satisfaction with the service provided [31,37,40,53]. Previous researches into service encounter interaction had highlighted the importance of employees being flexible and adapting their behavior to meet the changing needs and requests of customers [4,24]. Employees need to be able to recognize customers’ needs and inappropriate or inadequate treatment in such situations can result in dissatisfaction. Therefore, it is important for employees to adequately display their role-prescribed and extra-role service behaviors depending upon what customers require in service encounters.

Sparks, Bradley and Callan [52] investigated the effects on customer satisfaction and service quality of two employee characteristics: the degree to which the employee is empowered (full, limited, and none), and the employee communication style. Results revealed that fully empowered employees produced more customer satisfaction than the others, but only when the service provider used an accommodating style of communication. Fully empowered and nonempowered employees were not judged differently when an underaccommodating style of communication was adopted. Therefore, communication behavior of employee plays an important role, mediat-
ing between employee empowerment and service quality.

For most service industries, quality is attached to the service encounter [10,42]. Therefore, the level of service quality is dependent on employee performance. However, besides employees’ attitudes in the performance of their service behaviors, service quality also depends on employees’ inherent service ability. Hereupon service ability means the required knowledge, skills and concepts which are required for the line employee to offer excellent service [2,30]. Grönroos [21] indicated that the customer-contact employees must control the quality of the service at the time it is produced. Whether that same contact employee has the ability and willingness to be immediately aware of changes in consumer wants and needs is essential to the success of service companies. In summary, besides the requirement of positive service behavior, the frontline employees also need to possess the ability to provide good service for customers.

Clearly, employee behavior plays an important role in the relationship between employee empowerment and service quality. However, whether service behavior mediates the relationship of employee empowerment and service quality is the problem we want to examine. Service behavior may mediate or intervene between employee empowerment and service quality, that is, employee empowerment may influence service quality through its effect on service behavior. Moreover, we are curious to know by which kinds of service behavior, customers’ satisfaction with respect to each dimensions of service quality can be passed? On the basis of the above, we propose the following hypothesis:

Hypothesis 4: The relationship between employee empowerment and service quality would be mediated by service behavior in tourist hotel.

2.5 A Conceptual Framework

Service quality arose from interaction between customers and employees in service industries [3,57], so customer-contact employees would play an important role in influencing customers’ perceptions of service encounter [4,36]. Most service practitioners permit customer-contact employees to do the right thing and endow them with solving customers’ problems by means of empowerment at the real time [14,16,49,50]. The customer-contact employees’ attitudes and behaviors could influence customers’ perceptions of the service, because their attitudinal and behavioral responses
are the primary determinants of customers' perceptions of service quality [5]. Furthermore, customer-contact employee performed the service behavior that associated with his/her inhered ability and performance. Hereupon, service ability refers to the degrees of required knowledge, skills and concepts to offer the excellent service for a variety of customers [2,30]. Hallowell, Schlesinger and Zornitsky [22] defined service ability as an employee’s perception of his or her ability to serve the customer, is a direct antecedent of customer satisfaction. In summary, the conceptual framework in this study is constructed as Figure 1. The direct relationships among employee empowerment, service behavior and service quality are captured by H1, H2 and H3. In this framework, service behavior acts as mediator of the employee empowerment-service quality relationship shown in H4. In this study, moreover, we adopt service ability as control variable in order to clarify the role of service behavior.

3. Methodology

3.1 Samples and Data Collection

For testing hypothesizes, we collected data from the front line employees who provided service in service encounters and customers in 42 departments including front desk, restaurants, gymnasium and barbershop, which belong to five branches of a famous chain of tourist hotel in Taiwan. The domestic hotel chain was chosen as the sampling frame because of the profit-center operation of this chain, and the environment and method of employee empowerment among separate department are different. Before collecting data, we pre-tested our questionnaire with a sample of 30 emp-
loyees and 30 customers from the tourist hotel. By the pre-test, several items were revised and some changes were made to the questionnaire format.

We imitated the survey method of Hartline and Ferrell [24] in order to investigate the front line employees and customers. To initiate a sample, the general manager was contacted with a goal of obtaining the support, and he agreed to participate by providing a complete mailing list of department managers’ names and hotel addresses. Also, the general manager of the chain informed manager of each department that explained the research and asked for their support.

The survey resulted in a pool of 42 departments, all of which were sampled. In order to explore the relationships among employee empowerment, service behavior and service quality from the viewpoint of employees and customers, we connected the data of the front line employees and customers from the same department. Thus, we divided data into 42 units according to their department. All data for analysis must be predicted upon the basic principle of the same department. Because the acceptable conditions of employee empowerment are different in each department, and service providers inhere different service ability so as to show different service behaviors, and customers recognized different service quality in departments, we used the dataset of each 42 department for analysis.

Survey packets were mailed to each department manager belong this chain. There contained 10 employee surveys, 30 customers surveys, instructions, and postage-paid envelopes in each packet. Customer-contact employees were asked about their levels of employee empowerment, service behavior and service ability. The customers’ subjective perceptions of service quality were determined by directly interviewing them. The department managers were not only asked to distribute the employee surveys across a broad range of customer-contact positions but also distribute the surveys as customers checked out. One month after the initial mailing, a second wave of the same materials was mailed. All questionnaires were returned directly to the researchers.

Of the total samples, 42 departments of these hotels responded by returning at least 5 employees and 5 customers. Of these, only 11 employees and 19 customers surveys were unusable. Usable questionnaires were returned by 203 employees (94.9% response rate) and 272 customers (93.5% response rate). And, the profiles of customers were shown to the general managers who confirmed that the sample was representative of the overall guest population. For the requirement of analysis, the employees’ and
customers’ responses were aggregated (averaged) to create a single data set in which the cases represent departments rather than persons. The final sample of 42 departments consisted of 4.83 employees and 6.48 customers for each.

3.2 Measurement

To remain consistent with previous research, the measures were taken or adapted from previous studies. The Table 1 presents the scales of employee empowerment, service quality and others. All items were measured on five-point Likert-type scale, where 1 = definitely disagree and 5 = definitely agree.

Employee empowerment was operationalized as the extent to which organization supports an environment that lead to a climate of empowerment so as to encourage their taking initiative to improve process and to take action in performing their jobs. The eight dimensions of empowerment were measured by a 24-items scale. Of these items, thirteen items were adapted from Scott and Jaffe’s [47] empowerment scale to measure morale, recognition, teamwork, participation and healthy environment. In addition, we also referred the studies of Sparks, Bradley and Spreitzer’s [52] and Hocutt and Stone [27] to adapt the scales of self-determination, impact and contents of empowerment for our use. Service behavior was operationalized as the helpful behavior of employees directed toward the organization or individuals. The scale we employed uses six items of Bettencourt and Brown [3] study, which assess the role-prescribed behavior and extra-role behavior.

Service ability was operationalized as the required knowledge, skills and concepts for the line employee to offer excellent service. The measure we adopted is a three-item scale adapted from Jaworski and Kohli [30]. Service quality was measured with a five-dimension 22–item scale adapted from Parasuraman, Zeithaml and Berry [42]. We combined expectations and perceptions into a single measure, as was suggested by Brown, Churchill, and Peter [8]. Our measure asks hotel guests to rate each item, using a five-point scale ranging from “much worse than I expected” to “much better than I expected.” Higher scores reflect higher perceived service quality. In addition, we made a slight modification by changing the wording of items to fit the features of tourist hotel.

3.3 Measure Reliability and Validity

The reliabilities of multi-item scales were determined by computing
Cronbach alphas. All scales have acceptable alpha values ranging between 0.72 and 0.97. The descriptive statistics including correlations and reliability for all of the dimensions were provided in Table 1. Table 1 showed that reliability analysis of the instrument revealed acceptable reliability coefficients for all dimensions. All of the scales have almost been naturalized in prior studies, and a scale validation procedure was accomplished using the analysis of item inter-correlation, and the analysis of item-total correlations. The purpose of this portion of the analysis was to identify and omit poorly performing items for the reflective measures. Some intercorrelation existed among the dimensions, in order to identify and eliminate poorly performing items for the reflective measurement, so we used factor analysis to test the constructs.

4. Analysis and Results

In employee aspect, the sample was 66.5% female, and 55% of respondents was married. 75.9% of respondents’ ages were under 30 years old. Most (59.6%) of respondents had worked for their hotel under 3 years. Over half (79.3%) of respondents’ wages were under 1,000 dollars per month. In customer aspect, most (78%) of respondents’ ages ranged from twenty-one to fifty years. 55.1% of samples were female, and 43.3% of respondents were married. The most (62.5%) of education levels of respondents were college and university.

To examine the hypotheses, two kinds of questionnaire data were used in this survey: one is from the contact employees’ aspect and another is from the customers’ aspect. And, we used regression to test the hypotheses. We conducted this study with service quality as dependent variable, employee empowerment as independent variable, service behavior as moderator variable and mediator variable, and service ability as a control variable. Because all the constructs in this study were measured through the viewpoints of employees and customers respectively, the employee and customer response were aggregated to department level for analysis. The means, standard deviations and correlations for all constructs were shown in Table 1. There exist significant relationships among employee empowerment, service behavior and service quality, moreover, there also exist positive correlations between service ability and other constructs.
Table 1 Mean Responses, Standard Deviations, Reliabilities and Correlations of Statement

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Mean</th>
<th>S. D.</th>
<th>Alpha</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Empowerment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Morale</td>
<td>3.29</td>
<td>0.49</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Recognition</td>
<td>3.29</td>
<td>0.38</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Teamwork</td>
<td>3.30</td>
<td>0.49</td>
<td>0.84</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Participation</td>
<td>3.36</td>
<td>0.37</td>
<td>0.73</td>
<td>0.59</td>
<td>0.65</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Healthy Environment</td>
<td>3.38</td>
<td>0.40</td>
<td>0.78</td>
<td>0.80</td>
<td>0.56</td>
<td>0.68</td>
<td>0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Self-determination</td>
<td>3.31</td>
<td>0.40</td>
<td>0.89</td>
<td>0.56</td>
<td>0.49</td>
<td>0.68</td>
<td>0.59</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Impact</td>
<td>2.99</td>
<td>0.41</td>
<td>0.91</td>
<td>0.31</td>
<td>0.19</td>
<td>0.40</td>
<td>0.38</td>
<td>0.19</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Contents of Empowerment</td>
<td>2.91</td>
<td>0.32</td>
<td>0.72</td>
<td>0.66</td>
<td>0.51</td>
<td>0.52</td>
<td>0.45</td>
<td>0.69</td>
<td>0.45</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Behavior</td>
<td>3.82</td>
<td>0.46</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Role-prescribed service behavior</td>
<td>3.80</td>
<td>0.41</td>
<td>0.94</td>
<td>0.56</td>
<td>0.34</td>
<td>0.30</td>
<td>0.33</td>
<td>0.70</td>
<td>0.16</td>
<td>0.16</td>
<td>0.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Extra-role service Behavior</td>
<td>3.59</td>
<td>0.36</td>
<td>0.87</td>
<td>0.69</td>
<td>0.71</td>
<td>0.50</td>
<td>0.49</td>
<td>0.79</td>
<td>0.40</td>
<td>0.05</td>
<td>0.49</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Quality</td>
<td>3.58</td>
<td>0.42</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Tangibles</td>
<td>3.53</td>
<td>0.38</td>
<td>0.86</td>
<td>0.19</td>
<td>0.09</td>
<td>0.02</td>
<td>0.09</td>
<td>0.35</td>
<td>0.11</td>
<td>0.06</td>
<td>0.27</td>
<td>0.27</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Reliability</td>
<td>3.49</td>
<td>0.41</td>
<td>0.89</td>
<td>0.87</td>
<td>0.72</td>
<td>0.79</td>
<td>0.73</td>
<td>0.64</td>
<td>0.60</td>
<td>0.54</td>
<td>0.67</td>
<td>0.52</td>
<td>0.68</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Responsiveness</td>
<td>3.48</td>
<td>0.41</td>
<td>0.90</td>
<td>0.75</td>
<td>0.93</td>
<td>0.78</td>
<td>0.79</td>
<td>0.79</td>
<td>0.63</td>
<td>0.41</td>
<td>0.67</td>
<td>0.53</td>
<td>0.67</td>
<td>0.07</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Assurance</td>
<td>3.59</td>
<td>0.36</td>
<td>0.81</td>
<td>0.74</td>
<td>0.73</td>
<td>0.86</td>
<td>0.83</td>
<td>0.77</td>
<td>0.80</td>
<td>0.61</td>
<td>0.59</td>
<td>0.63</td>
<td>0.08</td>
<td>0.90</td>
<td>0.83</td>
<td>0.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Empathy</td>
<td>3.46</td>
<td>0.41</td>
<td>0.90</td>
<td>0.54</td>
<td>0.38</td>
<td>0.62</td>
<td>0.58</td>
<td>0.49</td>
<td>0.89</td>
<td>0.82</td>
<td>0.52</td>
<td>0.06</td>
<td>0.26</td>
<td>0.03</td>
<td>0.70</td>
<td>0.63</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>16. Service Ability</td>
<td>3.67</td>
<td>0.49</td>
<td>0.93</td>
<td>0.64</td>
<td>0.56</td>
<td>0.41</td>
<td>0.36</td>
<td>0.70</td>
<td>0.23</td>
<td>0.11</td>
<td>0.40</td>
<td>0.77</td>
<td>0.70</td>
<td>0.25</td>
<td>0.50</td>
<td>0.52</td>
<td>0.44</td>
<td></td>
</tr>
</tbody>
</table>

Note: a Cronbach’s alphas; b p<0.05; c p<0.01.

4.1 The Relationship Between Employee Empowerment and Service Quality

In the customer-contact employee aspect, according to statistical results, employee empowerment was positively related to the service quality (β =0.866, p<0.01 and R²=0.834). Table 2 summarizes this result. Thus, the hypothesis 1 was supported in that a higher employee empowerment leads to higher level of service quality. In order to purify the relationship of

Table 2 Employee Empowerment and Service Quality

<table>
<thead>
<tr>
<th></th>
<th>Service Quality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Empowerment</td>
<td>0.886**</td>
<td>0.834</td>
</tr>
<tr>
<td>R-square</td>
<td>0.507.125**</td>
<td>0.834</td>
</tr>
<tr>
<td>Service Ability</td>
<td>0.306*</td>
<td></td>
</tr>
<tr>
<td>Employee Empowerment</td>
<td>0.863**</td>
<td>0.934</td>
</tr>
<tr>
<td>R-square</td>
<td>0.276.596**</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Note: ** p<0.01; * p<0.05

447
employee empowerment and service quality, service ability was included as a control variable in all analysis. We estimated a hierarchical multiple regression equation with customers’ perceived service quality as the dependent variable and employee empowerment and service ability as the independent variables. According to our result, the independent variables were positively related to the dependent variable (β =0.863, p<0.05 and ΔR²=0.1).

In advance, the regression results on each dimensions of service quality are shown in Table 2 and Table 3. In reliability dimension of service quality, perceptions of “Morale” (β =0.318 and p<0.01), “Healthy Environment” (β =0.306 and p<0.01), “Self-determination” (β =0.281 and p<0.01) and “Impact” (β =0.163 and p<0.05) were statistically significant. In responsiveness dimension of service, “Recognition” (β =0.668 and p<0.01), “Participation” (β =0.225 and p<0.01), and “Contents of empowerment” (β =0.182 and p<0.01) showed statistically significant. In assurance dimension of service quality, “Impact” was most significant (β =0.272 and p<0.01), and following the “Teamwork” (β =0.244 and p<0.05), “Healthy Environment” (β =0.216 and p<0.05), and “Self-determination” (β =0.172 and p<0.05). In empathy dimension of service quality, “Self-determination” (β =0.518 and p<0.01) and “Impact” (β =0.428 and p<0.01) were statistically significant.

Table 3 Employee Empowerment and Service Quality

<table>
<thead>
<tr>
<th>Employee Empowerment</th>
<th>Service Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tangibles</td>
</tr>
<tr>
<td>Morale</td>
<td>-0.134</td>
</tr>
<tr>
<td>Recognition</td>
<td>-0.338</td>
</tr>
<tr>
<td>Teamwork</td>
<td>-0.211</td>
</tr>
<tr>
<td>Participation</td>
<td>0.050</td>
</tr>
<tr>
<td>Healthy Environment</td>
<td>0.865*</td>
</tr>
<tr>
<td>Self-determination</td>
<td>-0.366</td>
</tr>
<tr>
<td>Impact</td>
<td>0.087</td>
</tr>
<tr>
<td>Contents of empowerment</td>
<td>0.204</td>
</tr>
</tbody>
</table>

R-square: 0.348 0.965 0.968 0.940 0.905
F: 1.901 98.045** 108.356** 55.622** 33.965**

Note: ** p<0.01; * p<0.05
4.2 The Relationship Between Employee Empowerment and Service Behavior

The relationship between perceptions of employee empowerment and service behavior was tested in hypothesis 2, where we predicted that employees with higher level of empowerment would lead to higher level of service behavior. According to statistical results, employee empowerment was positively related to the service behavior ($\beta=0.270$, $p<0.01$ and $\Delta R^2=0.291$). Therefore, the hypothesis 2 was supported in that a higher employee empowerment leads to higher level of service behavior. Consistent with the study of Scott, Susanne and Bruce [41], the empowered employees might show the customer-oriented service behavior, because they possess more elasticity and capability to match the changeable need of customers. In other words, when employees have higher perceptions of empowerment, they might take the responsibility on their job and offer additional service actively.

In Table 4 and Table 5, Perceptions of “Recognition” ($\beta=0.408$ and $p<0.05$), “Healthy Environment” ($\beta=0.443$ and $p<0.05$) and “Self-determination” ($\beta=0.473$ and $p<0.05$) within employee empowerment were significantly related to extra-role service behavior. In contrast, employees’ perceptions of “Healthy Environment” ($\beta=0.469$ and $p<0.05$) were significantly related to role-prescribed service behavior.

Table 4 Employee Empowerment and Service Behavior

| Service Behavior |  
|------------------|---
| Employee Empowerment | 0.589**  
| R-square | 0.347  
| F | 21.298**  
| Service Ability | 0.629*  
| Employee Empowerment | 0.270**  
| R-square | 0.640  
| $\Delta$ R-square | 0.291  
| F | 34.724**  

Note: ** $p<0.01$; * $p<0.05$
Table 5 Employee Empowerment and Service Behavior

<table>
<thead>
<tr>
<th>Service Ability</th>
<th>Extra-Role Service Behavior</th>
<th>Role-prescribed Service Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morale</td>
<td>0.032</td>
<td>-0.037</td>
</tr>
<tr>
<td>Recognition</td>
<td>0.408*</td>
<td>0.089</td>
</tr>
<tr>
<td>Teamwork</td>
<td>-0.144</td>
<td>0.412</td>
</tr>
<tr>
<td>Participation</td>
<td>-0.051</td>
<td>0.064</td>
</tr>
<tr>
<td>Healthy Environment</td>
<td>0.443*</td>
<td>0.469*</td>
</tr>
<tr>
<td>Self-determination</td>
<td>0.473*</td>
<td>0.071</td>
</tr>
<tr>
<td>Impact</td>
<td>-0.128</td>
<td>-0.215</td>
</tr>
<tr>
<td>Contents of empowerment</td>
<td>0.049</td>
<td>0.142</td>
</tr>
</tbody>
</table>

R-square: 0.714, 0.688

F: 10.872**, 7.838**

Note: ** p<0.01; * p<0.05

4.3 The Relationship Between Service Behavior and Service Quality

The relationship of employees’ service behavior and service quality was examined in hypothesis 3. As the results, the perception of service behavior was significantly related to service quality (\( \beta = 0.452, p<0.01 \) and \( \Delta R^2 = 0.01 \)). This hypothesis was supported by the data. Kelley and Hoffman [35] found there existed the positive relationship between employee perceptions of customer-oriented behavior and customer perceptions of service quality. We also found that perceived service behavior of employee was positively associated with perceived service quality of customer.

The results in Table 6 and Table 7 indicated the perception of extra-role service behavior was significantly related to reliability (\( \beta = 0.673 \) and \( p<0.01 \)), responsiveness (\( \beta = 0.677 \) and \( p<0.01 \)), assurance (\( \beta = 0.903 \) and \( p<0.01 \)) and empathy (\( \beta = 0.547 \) and \( p<0.05 \)) dimensions of service quality. In contrast, the perception of role-prescribed service behavior was only significantly related to empathy dimension of service quality (\( \beta = 0.478 \) and \( p<0.05 \)).

4.4 Mediator Analysis

For mediation to be shown in this study, Baron and Kenny [1] pointed out three conditions are necessary. First, employee empowerment must affect service behavior in a regression of service behavior on employee empower -
ment. Second, employee empowerment must affect service quality in a regression of service quality on employee empowerment. Third, service behavior must affect service quality in a regression of service quality on both employee empowerment and service behavior. If service behavior mediated the relationship, a significant relationship between employee empowerment and service quality should disappear or be reduced when service behavior dimensions are added to the model. This analysis is shown in Table 8.

First, the eight employee empowerment factors were tested as predictors of service quality (see Table 3). The results indicate that empowerment is significantly related to all dimensions of service quality except tangibles. In the aspect of reliability dimension, the employee empowerment factors including “Morale,” “Healthy Environment” and “Self-determination” (though weaker) are still significant and “Impact” factor is less significant (Table 8).

Table 6 Service Behavior and Service Quality

<table>
<thead>
<tr>
<th>Service Behavior</th>
<th>Service Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-square</td>
<td>0.298</td>
</tr>
<tr>
<td>F</td>
<td>16.988</td>
</tr>
</tbody>
</table>

Table 7 Service Behavior and Service Quality

<table>
<thead>
<tr>
<th>Service Behavior</th>
<th>Service Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra-Role Service Behavior</td>
<td>0.673**</td>
</tr>
<tr>
<td>Role-prescribed Service Behavior</td>
<td>0.461</td>
</tr>
<tr>
<td>R-square</td>
<td>0.139</td>
</tr>
<tr>
<td>F</td>
<td>2.050</td>
</tr>
</tbody>
</table>

Note: ** p<0.01; * p<0.05
Table 8 Mediating Effects of Service Behavior

<table>
<thead>
<tr>
<th>Service Behavior Dimensions</th>
<th>Tangibles</th>
<th>Reliability</th>
<th>Responsiveness</th>
<th>Assurance</th>
<th>Empathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Ability</td>
<td>0.045</td>
<td>0.019</td>
<td>0.016</td>
<td>0.036</td>
<td>0.053</td>
</tr>
<tr>
<td>Morale</td>
<td>0.010</td>
<td>0.302**</td>
<td>-0.012</td>
<td>0.053</td>
<td>0.027</td>
</tr>
<tr>
<td>Recognition</td>
<td>-0.176</td>
<td>0.022</td>
<td>0.688**</td>
<td>0.089</td>
<td>-0.048</td>
</tr>
<tr>
<td>Teamwork</td>
<td>-0.248</td>
<td>0.132</td>
<td>0.011</td>
<td>0.231*</td>
<td>-0.069</td>
</tr>
<tr>
<td>Participation</td>
<td>0.007</td>
<td>-0.036</td>
<td>0.212**</td>
<td>0.168*</td>
<td>0.045</td>
</tr>
<tr>
<td>Healthy Environment</td>
<td>0.725*</td>
<td>0.274**</td>
<td>-0.059</td>
<td>0.186</td>
<td>0.305*</td>
</tr>
<tr>
<td>Self-determination</td>
<td>-0.270</td>
<td>0.280**</td>
<td>0.113*</td>
<td>0.145</td>
<td>0.260*</td>
</tr>
<tr>
<td>Impact</td>
<td>0.043</td>
<td>0.158*</td>
<td>0.084</td>
<td>0.269**</td>
<td>0.388**</td>
</tr>
<tr>
<td>Contents of Empowerment</td>
<td>0.253</td>
<td>0.000</td>
<td>0.171**</td>
<td>-0.031</td>
<td>0.061</td>
</tr>
<tr>
<td>Extra-Role Service Behavior</td>
<td>-0.625*</td>
<td>-0.041</td>
<td>0.108</td>
<td>0.218*</td>
<td>0.321**</td>
</tr>
<tr>
<td>Role-prescribed Service Behavior</td>
<td>0.169</td>
<td>0.147*</td>
<td>0.110</td>
<td>-0.142</td>
<td>-0.056</td>
</tr>
<tr>
<td>R-square</td>
<td>0.438</td>
<td>0.968</td>
<td>0.972</td>
<td>0.951</td>
<td>0.924</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.232</td>
<td>0.956</td>
<td>0.962</td>
<td>0.933</td>
<td>0.896</td>
</tr>
<tr>
<td>F</td>
<td>2.005</td>
<td>81.916**</td>
<td>94.182**</td>
<td>52.591**</td>
<td>33.092**</td>
</tr>
</tbody>
</table>

Note: ** p<0.01; * p<0.05

when service behavior dimensions are added to the equation. Therefore, the relationship between “Impact” and reliability service quality is partially mediated by perceptions of role-prescribed service behavior (β=0.147 and p<0.05).

In responsiveness dimension of service quality, the results indicate that the strengths of “Participation” and “Contents of Empowerment” are little reduced but still significant when service behavior dimensions were added to the equation. Therefore, there is no sufficient evidence to support that the relationship between employee empowerment and responsiveness service quality is mediated by perceptions of service behavior.

In assurance dimension of service quality, when service behavior dimensions were added to the equation, “Healthy Environment” and “Self-determination” are no longer significant, and “Teamwork” and “Impact” are reduced but still significant. Therefore, the relationship between “Healthy Environment” and “Self-determination” of employee empowerment and service quality is completely mediated by perceptions of extra-role service behavior.
behavior (β =0.218 and p<0.05). “Teamwork” and “Impact” affect assurance of service quality directly.

In empathy dimension of service quality, the strengths of “Impact” and “Self-determination” are reduced and “Self-determination” is less significant when service behavior dimensions were added to equation. Therefore, the relationship between “Self-determination” and empathy service quality is partially mediated by perceptions of extra-role service behavior (β =0.321 and p<0.01). In summary, the results indicate only limited support for the mediation hypothesis.

5. Discussion and Implication

5.1 Discussion

Previous researches referring to the effect of employee empowerment toward service quality were addressed from the viewpoint of employee, and ignored that the environment of empowerment might also be associated with service quality. However, we incorporate empowerment climate into the definition of empowerment. The results of empirical investigation revealed that the more empowered employee perceived, the better service quality customer perceived. Specifically, to encourage employees taking initiative discretely in serving customers would positively influence the process quality in service encounter [6, 11].

Employee empowerment was significantly associated with all the dimensions of service quality except tangibles. Because tangibles was measured by physical evidences such as equipments, signage, uniforms and looks of employees, tangibles dimension was not associated significantly with employee empowerment. With respect to the reliability dimension, if employees were inspired, got more learning opportunities and owned more autonomy in performing their jobs, then it is helpful for customers to place confidence toward corporation. In responsiveness dimension of service quality, when employees were more recognized, got more participation opportunities and empowered in their departments, they could have sufficient capabilities to offer prompt and instant service for customers. In assurance dimension of service quality, when employees had significant influence in their departments, the customers would be confident in the service of the employees. Finally, in empathy dimension, if employees had a great influence and autonomy on their job, then they could consider the individual need of the customers and offer the personal service.

This study was verified Hypothesis 2 that there is a positive relationship
between employee empowerment and service behavior. That is, the empowered employees could improve their service behavior and offer excellent service for customers, and this finding was also verified by the study of Scott, Susanne and Bruce [48].

Providing that a corporation desires employees to perform extra-role service behavior aggressively, the strategies of employee empowerment can be applied, including the reinforcement of reward system, the affirmation of employees' efforts timely and the promotion of employees' self-determination. Only when employees are empowered to make decisions on their job, they may have self-managing and self-adjusted capacity to take responsibility on the jobs [54]. As for the role-prescribed behavior, it is more correlated with environment of empowerment. The results revealed that if a corporation supported a healthy environment of empowerment so as to help employees make progress in learning, then the employees might perform the required service behavior while serving customers.

We also reported the findings to prove Hypothesis 3 that there was a positive relationship between service behavior and service quality in the tourist hotel. It indicated when employees showed excellent service behavior, the perceived service quality of customers might be promoted. Consistent with the study of Parasuraman, Zeithaml and Berry [42], customers specially appreciate the service encounter while measuring service quality. Bowen and Schneider [5] demonstrated that customer-oriented service behavior influenced the perceived service quality of customers from the customers' viewpoint. We measure service behavior from the respective of employees and the same results were verified.

The empirical result of relationship between service behavior and service quality revealed that the extra-role service behavior positively affect the reliability, responsiveness, assurance and empathy dimensions of service quality. Once employees offered additional and individual service for customers actively, that would make customers fell warm-heartedly satisfied and reflected on those dimensions of service quality. Considering the relationship between role-prescribed behavior and service quality, only the empathy dimension was affected significantly. It was because routine and duty jobs were difficult to leave a deep impression on customers. However, the tourist hotel that we sampled specially emphasized the job requirements and the employees are strictly required to show enthusiasm while serving customers. Therefore, the role-prescribed behavior had a positive effect to empathy dimension of service quality.
Hypothesis 4 was partially demonstrated that the relationship between employee empowerment and service quality would be mediated by service behavior in tourist hotel. The previous studies have found that there was a positive relationship between employee empowerment and service quality [27, 52]. However, we find a meaningful variable “service behavior” from the literature review and practice judgment. The empirical result demonstrated that employee empowerment affect service quality directly, and indirectly through service behavior. Specifically, through the positive service behavior delivered by empowered employees, the perceived service quality of customers could be promoted.

In reliability dimension of service quality, if employees could exercise the influence on their jobs, then the reliability of experienced service quality would be strengthened through the role-prescribed behavior. Thus, empowering employees to have adequate influence on their jobs could promote the problem-solving ability and further offer excellent service for customers. In assurance dimension of service quality, employees’ perceptions of healthy environment and self-determination would affect customers’ perceptions of assurance indirectly through extra-role service behavior. Therefore, in managerial practice of empowerment, employees possess with complete autonomy, so they could be easier to satisfy various customers’ needs. After inhering appropriate autonomy, they were encouraged to deal with customers’ problems more originally, and then conveyed trust and confidence to the customers of tourist hotel. In empathy dimension of service quality, if employees were permitted possessing appropriate self-determination on their jobs, then the individualized attention that the organization provided to its customers would be promoted through the extra-role behavior. Once the employees have to completely follow the teller job description, they might not take care the individualize problem immediately and miss the true moment for dealing with customers’ complaints or dissatisfaction. Thus, endowing the employees with adequate flexibility and availing themselves to show more extra-role service behavior are necessary for letting customers experience individual and attentive service.

The results revealed that the interaction of employee empowerment and service behavior couldn’t predict service quality significantly, so service behavior could not moderate the relationship between employee empowerment and service quality, but it demonstrate the mediating effect for service behavior.
5.2 Implication and Future Research

The tourist hotel business is very labor-intensive. Besides the necessity of modern and complete facilities, how to offer the excellent service for customers through the front-line employees' behavior is the major issue for hotel management. For hotelkeepers, we suggest that creating an empowering environment might be a good start. If an organization could reinforce the empowerment culture and increase the degree of employee autonomy, then the service quality perceived by customers would be greatly promoted through the excellent service behavior offered by customer-contact employees. With respect to the training and development of the employee, the organization must supply employees a healthy environment for learning and growing and offer more opportunities for career development. In addition, it is necessary for organization to examine regularly weed out redundant rules or regulations those might badly affect the process of service delivery.

Organization could appropriately endow the customer-contact employees with more influences in their own department. Because customers' evaluations of service quality are almost always based on the behaviors of frontline employees, organizations rely heavily upon these employees to improve overall service quality provision. Encouraging employees to expand the domain of job through the participation of various team activities so as to establish the responsibility and creativity and avail them to offer constructive suggestions to organization, then the employees can feel their influence and contribution toward organization. Moreover, improving the employees' abilities and autonomy and encouraging their taking initiative to solve problem with their own judgments would be helpful for employees to establish confidence in performing their jobs.

According to the results of this study, the managers of tourist hotels could allow customer-contact employees to have a great deal of control over what happens in their work so that they can pursue perfect service correctly and properly through fulfilling responsibilities to customers as specified in their job description. In addition, the practitioners of tourist hotels should reduce the red tape and procedures that might interfere with getting things done, and grant employees considerable opportunity for independence and freedom in service encounters, so as to make sure that employees can be trusted and adequately equipped with professional information to assist customers voluntarily beyond their job requirements. Furthermore, customer-contact employees should have significant autonomy in determining how to do their jobs to consider the individual needs of the customers and offer
personalized service while employees would willingly go out of their ways to make a customer satisfied.

The question of the magnitude of employees’ service behaviors has an important practical side. However, the results of this study suggested that employees’ service behavior partially mediated the relationship between employee empowerment and service quality. The management of the hotel organization that participated in this study had a strong belief that if an organization endowed employees with adequate empowerment, it would make employees to show their role-prescribed and extra-role service behaviors, so as to afford customers proper service with excellent quality through employees’ service behaviors.

Our findings suggest several directions for further research. First, the present research explored the relationship of variables by using cross-sectional data, but the perceptions of employees or customers may change and interact due to the time factor. In the future, researchers might consider a longitudinal investigation to demonstrate the causal relationship. Second, because we conduct the survey by taking the sample of several hotels, future researchers might consider taking the whole industry as a sample or conducting empirical studies for more service industries in order to make an comparison between these industries, and incorporate the effect of organization related variables, such as “corporation culture” to examine its impact to the whole framework. Finally, the constructs in this study were measured through the viewpoints of employees and customers respectively; the employee and customer response were finally aggregated to department level for analysis. Future studies might consider adopting the pair-wise method to investigate the interaction effect.

Acknowledgement

This research was supported by grant NSC-90-2416-H-034-004 from National Science Council, Taiwan, R.O.C. The authors thank other colleagues’ participation in this project. The results and conclusions are those of the authors and represent the viewpoint of the sponsoring institution.

References


