



## REDUCE CUSTOMER VARIABILITY AND IMPROVE SERVICE QUALITY - THE CASE OF HOTEL INDUSTRY

King-Jang, Yang<sup>1</sup>, Shun-Hsing, Chen<sup>2,\*</sup>

<sup>1</sup>Professor, Center for General Education, Chung-Hua University, Taiwan, R.O.C.

<sup>2</sup>Professor, Department of Marketing & Distribution Management, Oriental Institute of Technology, Taiwan, R.O.C.

\*Corresponding author e-mail: [chen88@mail.oit.edu.tw](mailto:chen88@mail.oit.edu.tw)

### Abstract

The present study defines customers' uncertainty and variations as 'customer variability', and it is systematically categorized into six types; 'arrival variability', 'request variability', 'explanation variability', 'capability variability', 'effort variability', and 'variability in subjective preference'. The study also organises the strategic actions that can be adopted to reduce the adverse effects of the six kinds of customer variability, which are divided into four categories; 'classic accommodation', 'classic reduction', 'low-cost accommodation', and 'uncompromised reduction'.

This research then conducts an empirical study to investigate the implementation and effectiveness of these strategic actions for the hotel industry in Taiwan. From the analytic results, it can be found that the hotels favour the use of 'classic accommodation' actions to overcome customer variability. Most of the strategic actions belonging to the other three categories are relatively neglected by the hospitality industry, but there are of potentially effective actions to overcome the customer variability. The study concludes that hotels need to pay more attention to these neglected actions in order to reduce the adverse affect on service quality caused by customer variability, and then raise the customer loyalty.

**Keywords:** customer variability, service quality, customer loyalty, hotel industry.

### 1. INTRODUCTION

Entering into the new century, 'service' plays a crucial role in the economic activities, it is evidenced that most of the manufacturing enterprises raise their competitive advantage through providing 'value-added services' along with their core products (Sohel-Uz-Zaman & Anjalin, 2011), and that the current marketing has moved from a goods-dominant focus to a services-dominant focus (Vargo & Lusch, 2004). It is thus that several new service businesses, or even new service industries are emerged (Sohel-Uz-Zaman & Anjalin, 2011).

Service industries play a very important role in the economic development across the world, the service sector contributes to huge part of GDP, they contribute to GDP grew continuously from 65.4% in 1990 to over 73.0% in 2006 for the developed countries and about 50% GDP from 1990 to 2006 in the developing countries (UNCTAD Handbook of Statistics, 2010). The service industries are also the important contributors of the job employment (Sohel-Uz-Zaman & Anjalin, 2011), they contribute to labour employment more than 75% in the developed countries, and more than 50% in most of the developing countries (Yang, 2009). But the service industries are encountering the intense competition, during the contemporary age of global competition. They should consider how to possess the strategic competition, in order to sustain the constantly long-term profits and development.

The competitive advantage is based on the performances of customer retention and customer loyalty. According to the ACSI (American Customer Satisfaction Index) model (Fornell et al., 1996), customer loyalty is determined by the antecedents: perceived quality; customer expectation; and perceived value. Many researchers have evidenced the conclusion that customers' perception of service quality and value strongly affects their purchasing behavior. Shoemaker & Lewis (1999) had asserted that the marketing activities for the service industries are focused on the pursuit of the customer loyalty.

As a result, the nature of service has been changing rapidly, due to the increased customer integration into the core of the business, customization and intense customer relationship development (Sohel-Uz-Zaman & Anjalin, 2011). The service industries usually keep their high customer loyalty through their customer service and the increased employee empowerment. It is well-known that most service industries own the characteristics that customers will request very different requirements, and involve in the service delivery process (Fitzsimmons & Fitzsimmons, 2008). As a result, customers will cause the uncertainty and variations which make significant adverse effects on service quality during the service providing process. The service organizations usually adopt some strategic actions to reduce the adverse effects caused by customers' variations.

Frei (2006) first discussed this critical issue. He defined the uncertainty and variations caused by customers as 'customer variability' and categorized it into five types, and suggested the strategic actions adopted by service industries to reduce the adverse effects on the service quality caused by the five kinds of customer variability. Yang (2011) extended the Frei (2006) work by adding one type of customer variability, and modified the strategic actions considered by Frei (2006). Yang (2011) divided the strategic actions into four categories; 'classic accommodation', 'classic reduction', 'low-cost accommodation', and 'uncompromised reduction'. Yang (2011) also conducted the empirical study to investigate the implementation levels and their resulting effectiveness degrees of these various strategic actions with samples of Taiwanese service providers in a variety of industries. He found that the respondents favour the use of 'classic accommodation' actions to overcome customer variability and that they demonstrated a relative neglect of potentially effective actions belonging to the other three categories.

In the study of Yang (2011), the examination of the categories of customer variability and the investigation of the implementation and effectiveness of the various strategic actions are based on a sample constituted of several service industries with various situations of their customer variability and their adverse effects on the quality of service provision. As a result, its findings cannot provide precise implications for different service industries. Thus it is needed to study the same issues for specific service industry. Usually, the hospitality industries encounter strong competition, especially the hotel industry, and their marketing strategy will focus on the managing of customer satisfaction and customer loyalty (Shoemaker & Lewis, 1999). But in hotel industry, any kinds of customer variability

will cause very significant adverse effects on the business and service quality (Bitner et al., 1994), which may result in customers' complaints and dissatisfaction. Thus the researcher selects hotel industry as the sample for the empirical study.

## 2. LITERATURE REVIEW

Frei (2006) first systematically analyzed the types of customer variability. But it is needed to survey some studies which have discussed the issues of variations caused by customers for service industries (Yang, 2011), before analyze the types of customer variability proposed by Frei (2006). Parasuraman et al. (1985) proposed a model of service quality, it is known as the 'gaps model'. In this model, there are five potential 'gaps' appeared in the service consumption process. This gaps model demonstrates that the occurrence of these gaps will result in adverse effects on the customers' perception of service quality. Thus the service organizations usually adopt some strategic actions to eliminate these gaps (by the providers) in order to improve service quality (as perceived by customers) (Yang, 2006).

Fitzsimmons and Fitzsimmons (2008) followed the 'gaps model', and noted that the discrepancy of consumers' arrivals, and their specific demands, expectations and subjective preference are considered as the major factors of the gaps occurrence. These discrepancies and variations of arrivals and customers' needs cause the difficult for the hotels to match service provision with the customers' demands and ensure full utilisation of service capacity. Moreover, customers are sometimes needed to pay efforts in co-production of services, but their diverse knowledge, experience, willingness and motivation result in significant influence on service performance.

Bitner et al. (1994) focused on the customers' interacts with employees of service industries, and discussed the customers' behaviours, especially the inappropriate behaviours, uncooperative or unreasonably demanding, which are often the sources of dissatisfaction. Zoghbi-Manrique-de-Lara et al. (2013) specifically discussed the customer citizenship behaviours and customer dysfunctional behaviours in their research model. Those customers' behaviours considered by Bitner et al. (1994) and Zoghbi-Manrique-de-Lara et al. (2013) indicated some parts of customer variability.

Frei (2006) identified the variation, diversity and uncertainty caused by customers as 'customer variability', and categorized it into five typologies, which are summarised as follows.

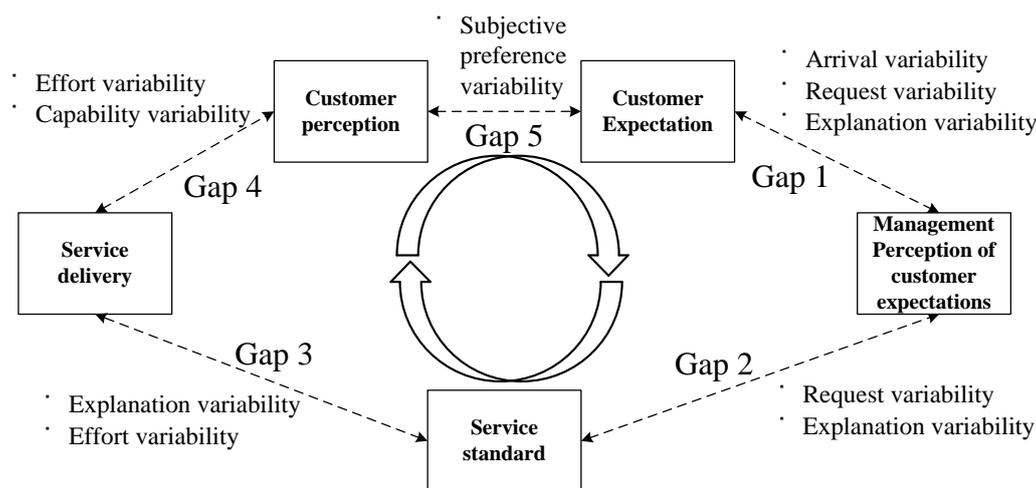
- \* *Arrival variability*: the customers' arrivals are very different at different time periods. Thus the differentials of service needs between peak time and off-peak time are very significant.
- \* *Request variability*: the customers differ widely in their service needs and desires, which cause the variation of customers' needs that the service enterprises need to provide.
- \* *Capability variability*: customers vary in terms of knowledge, ability, and experience, while they need to cooperate with the service provision.
- \* *Effort variability*: customers also differ in their willingness and intentions to engage in co-production of services, which will influence the service provision.
- \* *Subjective preference variability*: customers evaluate the service quality with their different subjective preferences, which determines their perception of service quality.

Frei (2006) systematically studied the categories of ‘customer variability’, Yang (2011) adopted the results proposed by Frei (2006), but suggested a sixth type of customer variability, which is termed ‘explanation variability’.

\* *Explanation variability*: which is appeared when customers describe their wants in ambiguous ways (Thomke & Hippel, 2002), which easily cause the service employees difficult to understand the customer’ real needs (Bitner et al., 1994).

This variability will occur because sometimes customers do not really know what they want (Ulwick, 2002) or because they cannot manifest their requirements clearly (Thomke & Hippel, 2002). Kim & Cha (2002) also asserted the issue of explanation variability encountered in the hotel industry.

In order to demonstrate the customer variability model, we need to discuss relationships among the types of customer variability and the gaps considered by Parasuraman et al. (1985) and Fitzsimmons and Fitzsimmons (2008). Actually the gaps occurred in the service delivery are caused by different types of ‘customer variability’. For examples, Gap 1 is affected by ‘arrival variability’, ‘request variability’, and ‘explanation variability’, Gap 2 is caused by ‘request variability’, and ‘explanation variability’, etc.. The influences of these various types of customer variability on the different gaps in the gaps model are illustrated in Figure 1, which is proposed by Fitzsimmons and Fitzsimmons (2008).



**Figure 1. The influences of different types of customer variability on the different gaps in the gaps model**

In hotel industry, *Arrival variability* is very significant, greater number of travellers reserve the hotel at the peak periods, but very few customers arrive at the off-peak time. The occurrences of *Request variability*, *Explanation variability*, and *Subjective preference variability* are also apparent for hotels, but the degree of *Capability variability* and *Effort variability* are somewhat weaker than the others. Benitez et al. (2007) emphasized that different kinds of travellers require distinct service functions and items, and this situation causes the variety of communications. They also asserted that customers have their specific subjective judgments. Akbaba (2006) also suggested the implications relating to arrival variability, request variability, and explanation variability etc. for the hotel industry. However, these kinds of customer variability significantly affect the hotels’ business performance and customers’ perception of service quality.

### **3. MATERIALS and METHODS**

The purpose of this research is to examine the implementation situation and the resulting effectiveness of the strategic actions adopted by hotel industry. Thus we conducted an empirical study by using the sample of hotels that were well-known in Taiwan.

The survey questionnaire consisted of three parts: (i) questions relating to the implementation level of each strategic action (44 items); (ii) questions relating to the effectiveness degree of strategic actions in reducing the adverse influence of customer variability (44 items, also); and (iii) basic data on the participants. In the first two parts, a five-point Likert-type scale was used for responses. For the reflection of the implementation level, the five-point Likert-type scale is ranged from 'never implement' (1) to 'strongly implement' (5). For the effectiveness degree of the strategic actions, the five-point Likert-type scale is ranged from 'very little effect' (1) to 'very significant effect' (5). A pilot test was conducted by co-operating with fifteen hotel managers in March 2015, and then made minor revisions following the participants' suggestions.

In order to assure the reliability of the survey study, the researchers contacted the participants and explored the issues of customer variability and related strategic actions in greater depth. The survey was conducted from May 2015 to July 2015 by using e-mail or interview. A total of 121 managers or hoteliers of well-known hotels were contacted or even interviewed, and 121 questionnaires were received. Among the completed questionnaires, there were only 113 valid questionnaires. We used these valid questionnaires to analyse the issues of interest.

We use the software system SPSS to do the statistical analyses. We calculate the mean, standard deviation (SD) of the implementation levels of strategic actions adopted by hotel industry and their effectiveness degrees. We also calculate the adoption percentage (%) of the strategic actions adopted by hotel industry, and the ranking of the effectiveness degrees.

### **4. RESULTS**

#### **Reliability and Validity**

Before proceeding to the further statistical analysis, the reliability and validity of the constructs were needed to assess. As shown in Table 1, reliability was confirmed when Cronbach's alpha coefficients for all of the categories of customer variability, and the implementation level and effectiveness degree of the strategic actions were found to be well above the accepted threshold value of 0.75 (Litwin, 1995).

Usually the content validity and construct validity are considered as the confirmation of validity. Herewith content validity was assumed because the design of the questionnaire was based on the previous study (Yang, 2011) and discussed with several experts in the hotel industry. Construct validity was confirmed by factor loading, which showed that the standardized factor loadings for all items on the customer variability constructs ranged from 0.628 to 0.851, for the implementation levels of the strategic actions their factor loadings are ranged from 0.408 to 0.890, and for the effectiveness degrees of the strategic actions their factor loadings are ranged from 0.423 to 0.885, which were greater than the threshold level of 0.4 proposed by Nunnally and Berstein (1994). These results demonstrated that the convergent validity and identification of the measurement model were acceptable (Kelloway, 1998).

**Table 1 Cronbach's alpha coefficients for the constructs of the questionnaire**

Questionnaire construct	Cronbach's $\alpha$ value
Arrival variability	0.768
Request variability	0.772
Explanation variability	0.759
Capability variability	0.801
Effort variability	0.785
Subjective preference variability	0.750
Implementation level of strategic actions	0.929
Effectiveness degree of strategic actions	0.939

### Arrival Variability

Based on the confirmation of the reliability and validity of the constructs of the questionnaire, we can conduct the further analyses of the implementation level and effectiveness degree of the strategic actions for each type of the customer variability. We first discuss the case of arrival variability. Arrival variability is the critical problem for the hotel industry. From the analytic results listed in Table 2, we can find out the actual implementation situations and effectiveness degrees of the strategic actions related to arrival variability.

Strategic action 'arrange adequate numbers of staffs and service personnel in the front desk at peak times (CA)' is the most commonly adopted by the hotels (adopted by all the respondents). This strategic action has the highest level of implementation (mean of 4.10 on a scale of 1–5, and with the lowest standard deviation 0.65) and the greatest effectiveness degree (mean of 4.00 on a scale of 1–5, and also with the lowest standard deviation 0.69).

**Table 2 Implementation and effectiveness of strategic actions used to reduce the arrival variability**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage respondents (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR).						
Arrange adequate numbers of staffs and service personnel in the front desk at peak times (CA)	4.10	0.65	100	4.00	0.69	1
Employ part-time service personal at peak time (LC)	3.49	1.16	91.15	3.51	0.79	2
Require reservations at peak time (CR)	3.10	1.15	86.73	3.36	0.93	3
Discount room rates at off-peak time (CR)	2.73	1.12	80.53	3.00	0.91	5
Provide alternative demands to level arrivals without requesting customers to change their decisions. (UR)	2.26	1.22	58.41	2.98	0.87	6
Outsource non-strategic functions (LC)	2.24	1.08	68.14	3.01	0.75	4
Automate services with technologic facilities (LC)	2.07	1.00	63.72	2.68	0.88	7
Provide limited number of rooms to specific customers (CR)	1.70	0.92	45.13	2.67	0.82	8
Total	2.71	1.04		3.11	0.82	

The next most commonly used by hotels is the strategic action 'employ part-time service personnel at peak time (LC)' (utilised by 91.15% of respondents). This strategic action has a moderately high level of implementation (mean of 3.49), it is significantly less than the aforementioned action, it also has a relatively high degree of effectiveness (mean of 3.51; which was higher than the implementation level). The third most commonly adopted strategic action is 'customers are requested to make reservation at peak time (CR)' (adopted by 86.73% of respondents). It has a moderate level of implementation (mean of 3.10), but a relatively high degree of effectiveness (mean of 3.36, it was significantly higher than the implementation level).

Though the implementation level of the strategic action ‘discount room rates at off-peak time (CR)’ is not high (mean of 2.73), 86.73% of respondents has adopted this strategic actions. But it results in significant effectiveness (mean 3.36, which is significantly higher than the implementation level). The other strategic actions are with moderate or lower levels of implementation (less than 2.26), but all has good effectiveness. Their effectiveness degrees are all significantly higher than their implementation levels respectively, especially the action ‘outsource non-strategic functions (LC)’, its effectiveness ranking is number four. There are relatively few companies (45–68%) that has adopted these strategic actions.

Frei (2006) had expressed a preference for the low-cost accommodation (LC) actions, but the hotels more favour the classic strategies (classic accommodation (CA) and classic reduction (CR)), see Table 3. The research results related to arrival variability in the present study are somewhat different from those obtained from the study of Yang (2011), which was conducted for the general service industries. It can be concluded that different service industries will favour different kinds of strategic actions.

### Request Variability

The implementation situations and the related effectiveness of the strategic actions used to reduce the adverse influences of the request variability are shown in Table 3. The CA actions ‘train employees with the ability of solving varied requests’ (the means of implementation level and effectiveness degree are 3.45, 3.43 respectively) and ‘ensure that enough senior staffs are on hand’ (mean of implementation level is 3.35; mean of effectiveness degree is 3.41) are the top two priorities in the scores of implementation levels and effectiveness degrees. Most of the respondents (96.46 %) adopted these two strategic actions.

**Table 3 Implementation and effectiveness of strategic actions used to reduce request variability**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage respondents (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR)						
Train employees with the ability of solving varied requests (CA).	3.45	0.90	96.46	3.43	0.83	1
Ensure that enough senior staffs are on hand (CA)	3.35	0.91	96.46	3.41	0.88	2
Require reservations for specific services (CR)	2.97	1.15	85.84	3.27	0.91	3
Segment customers on basis of their different requests (UR)	2.88	1.07	88.50	3.03	0.87	4
Employ part-time specialised personnel (LC)	2.56	1.14	75.22	2.99	0.77	5
Provide self-service options for customers (LC)	2.23	1.03	68.14	2.80	0.76	6
Limit service breadth (CR & UR)	2.22	1.07	68.08	2.77	0.79	7
Ask customers to compromise their requests (CR)	2.17	0.98	69.03	2.65	0.85	9
Automatic services with technologic facilities (LC)	2.01	1.01	58.41	2.72	0.82	8
Total	2.65	1.03		3.01	0.83	

The strategic action with third priority is ‘require reservations for specific services (CR)’, the mean of its implementation level is 2.97, it is not high. However, its effectiveness is significant better, the mean of the effectiveness degree is 3.27, which is significantly higher than the implementation level. Among the top four priorities there is only one UR action, which is ‘segment customers on the basis of their requests’ with moderate implementation level ( mean 2.88), but with high effectiveness degree (mean 3.03).

The other actions are with moderate or lower implementation level, but they result in good effectiveness (see Table 3), especially the LC actions and UR actions, which are preferred by Frei (2006). Thus the hotels need to raise the implementation levels on the LC actions and UR actions in the future. The research results related to request

variability are also somewhat different from those obtained from the study of Yang (2011). Both the implementation level and effectiveness degree of the strategic actions in hotel industry are less than those considered in general service industries. It can be concluded that the request variability is not a severe problem for the hotel industry.

### Explanation Variability

Usually the explanation variability is an essential communication problem for service organisations, including hotel industry. Because many customers are unable to explain their needs clearly, the service personnel need to possess the communication and explanatory skills that are sufficient to overcome the explanation variability.

The hotels prefer to adopt CA actions to reduce the explanation variability, the most commonly adopted by the hotels are two CA actions, which are ‘arrange sufficient staffs with communication experience’ (mean is 3.83, and 99.12% of the respondents adopt it) and ‘train employees with communication skills’, (mean is 3.57, and 98.2% of the respondents adopt it), see Table 4. These two actions also have the highest degrees of effectiveness (means are 3.88 and 3.54 respectively). The next most commonly used by hotels are two UR strategic actions, which are ‘provide easily understood instruction of service items’ (mean 3.04) and ‘provide a list of basic service packages’ (mean 2.82), but they have resulted in significant effectiveness (the means are 3.15 and 3.16 respectively).

**Table 4 Implementation and effectiveness of strategic actions used to reduce explanation variability**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage respondents (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR)						
Arrange sufficient staffs with communication experience (CA)	3.83	0.77	99.12	3.88	0.84	1
Train employees with communication skills (CA)	3.57	0.88	98.23	3.54	0.87	2
Provide easily understood instruction of service items (UR)	3.04	1.13	87.61	3.15	0.88	4
Provide a list of basic service packages (UR)	2.82	1.16	81.42	3.16	0.94	3
Require customers to choose the provided service options (CR)	2.56	1.06	80.53	2.88	0.89	5
Provide self-service options for customers (LC)	2.15	1.04	65.49	2.75	0.84	7
Provide limited service items (CR)	2.08	0.96	68.14	2.52	0.77	8
Ask customers to reserve the services on line (LC)	1.94	0.99	57.52	2.77	0.84	6
Total	2.75	1.00		3.08	0.86	

Similarly to the case of the request variability, the other actions are with moderate or lower implementation level, but they result in good effectiveness (see Table 4). However there are two LC actions ‘provide self-service options for customers’ and ‘ask customers to reserve the services on line’, which are with low implementation level (means are 2.15 and 1.94 respectively), but their effects are specially high (the means are 2.75 and 2.77 respectively). It means that the hotels need to accentuate the implementation of all the strategic actions which will result in significant effectiveness, especially the two LC strategic actions, which are suggested by Frei (2006).

### Capability Variability

Customers usually are involved in the service delivery process, and they are often requested to co-work with the service providers. Because the customers’ capabilities are very different, hotels need to take certain strategic actions to overcome the adverse effects caused by capability variability.

The most commonly adopted by the hotels are the CA actions, which are ‘arrange employees who can adapt to customers’ varied abilities (CA)’ (mean is 3.62, and adoption rate is 99.12%) and ‘do work for customers (CA)’ (mean is 3.42, and adoption rate is 95.58%), see Table 5. The implementation levels of other actions are significantly

less than the first two, especially the actions ‘reduce the works that customers need to cooperate with the service staffs (CR)’ and ‘provide distinct services to customers on the basis of their capability (UR)’, their implementation levels are very low (means are 1.88 and 1.82, the adoption rates are about 50%). But these strategic actions can result in good effects on the reduction of the adverse influence of capability variability.

From the analytic results we can also concluded that all the strategic actions will have the good effectiveness on the reduction of the adverse influence caused by the capability variability, but there are some actions the hotels do not pay more attention on the execution. Thus, the hotels need to raise the implementation levels on these actions neglected by them.

**Table 5 Implementation and effectiveness of strategic actions used to reduce capability variability**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR)						
Arrange employees who can adapt to customers’ varied abilities (CA)	3.62	0.77	99.12	3.56	0.78	2
Do work for customers (CA)	3.47	0.88	95.58	3.57	0.75	1
Employ low-cost labour to help customers (LC)	2.49	1.09	78.76	2.82	0.86	4
Create self- services with no special skills (LC)	2.42	1.11	75.22	2.84	0.92	3
Reduce the works that customers need to cooperate with the service staffs (CR)	1.88	1.09	48.67	2.66	0.98	5
Provide distinct services to customers on the basis of their capability (UR)	1.82	0.96	51.33	2.41	8.82	6
Total	2.62	0.98		2.98	0.85	

### Effort Variability

While customers involve in the service delivery process, the service results sometimes are not only depended on the customers’ capabilities (as discussed above), but also affected by their willingness to co-work with service personnel. Because the customers’ willingness are very different, the amount of effort that they apply to the co-work (‘effort variability’) is also an issue for service providers.

As shown in Table 6, the hotels prefer to adopt the CA actions again in the case of effort variability. The most two commonly adopted by the hotels are actions ‘do work for customers’ (mean is 3.28, and adoption rate is 93.81%) and ‘ensure employees who can compensate for customers’ lack of effort’ (mean is 3.17, and adoption rate is 89.38%). These two actions are also the top two priorities in effectiveness degree (their means are 3.34 and 3.23 respectively).

**Table 6 Implementation and effectiveness of strategic actions used to reduce effort variability**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR)						
Do work for customers (CA)	3.28	0.96	93.81	3.34	0.85	1
Ensure employees who can compensate for customers' lack of effort (CA)	3.17	1.08	89.38	3.23	0.86	2
Employ low-cost labour to help customers (LC)	2.39	1.08	71.68	2.89	0.73	3
Use a normative requirement to get customers' effort (UR)	2.36	1.04	71.68	2.83	0.86	6
Offer distinct services to customers on the basis of their effort (UR)	2.30	1.14	64.60	2.87	0.91	4
Use some penalties to induce customers to increase their willing (CR)	2.08	1.16	54.87	2.86	0.90	5
Create self-service options with extensive automation (LC)	1.98	0.94	61.95	2.62	0.78	7
Total	2.51	1.06		2.95	0.84	

The implementation levels of other actions (the means are from 1.98 to 2.39) are significantly less than the top two actions, their adoption rates are from 54.87 to 71.68, see Table 6. But their effectiveness are very good (the means of effectiveness degrees are from 2.62 to 2.89). It ascertains that hotels need to improve the implementation level of these strategic actions, especially the CR action 'use some penalties to induce customers to increase their willing', and the LC action 'create self-service options with extensive automation'. Since the effectiveness degrees are significantly higher than the implementation levels for all the strategic actions, the hotels must re-consider the execution on the actions neglected by them.

### Variability in Subjective Preferences

The customers have a wide diversity of subjective preferences as predicted, which will significantly affect their evaluation of service quality. Thus the hotels usually place considerable emphasis on the implementation of strategic actions to adapt to their customers' subjective preferences.

The most two commonly adopted by the hotels are the LA actions as opposed to the aforementioned different kinds of variability; their most commonly adopted actions are CA actions. As shown in Table 7, 100% of respondents adopt the LC action 'enhance powerful explanations to customers', which had the highest level of implementation level (mean is 3.81) and effectiveness degree (mean is 3.69). The second most commonly adopted action (99.12% adoption rate) is also a LC action, which is 'enhance customers' understanding of the service content and standard'. Both its implementation level (mean is 3.57) and effectiveness degree (mean is 3.54) are also on the first two priority.

**Table 7 Implementation and effectiveness of strategic actions used to reduce variability in customers' subjective preferences**

Strategic actions	Implementation			Effectiveness		
	Mean	SD	Percentage (%)	Mean	SD	Ranking
Classic accommodation (CA), Classic reduction (CR), Low-cost accommodation (LC), and Uncompromised reduction (UR)						
Enhance powerful explanations to customers (LC)	3.81	0.76	100	3.69	0.85	1
Enhance customers' understanding of the service content and standard (LC)	3.57	0.80	99.12	3.54	0.78	2
Ensure staffs who can diagnose differences in customers' subjective preferences and adapt accordingly (CA)	3.44	0.86	98.23	3.45	0.83	3
Persuade customers to adjust their preferences to match the service provisions (CR)	3.07	1.10	89.38	3.24	0.94	4
Segment customers on the basis of their subjective preferences (UR)	2.60	1.11	81.42	2.94	0.93	5
Total	3.30	0.92		3.37	0.87	

The CA action 'ensure staffs who can diagnose differences in customers' subjective preferences and adapt accordingly' is also commonly adopted by the hotels (the adoption rate is 98.23). Its implementation level (mean is 3.44) and effectiveness degree (mean is 3.45) are also moderate high. The other two actions 'persuade customers to adjust their preferences to match the service provisions (CR)' and 'segment customers on the basis of their subjective preferences (UR)' are implemented by most hotels, see Table 7.

Almost all of the participant hotels in the present study are very concerned about their customers' perceptions of their service quality. They therefore take several actions to ensure adequate communication with their customers regarding subjective preferences. As a result, the overall average of the means of the levels of implementation of the strategic actions in response to this type of variability was 3.30, which was significantly higher than the overall average of the means of the implementation levels of strategic actions undertaken in response to the other kinds of variability—which were 2.71 (arrival variability), 2.65 (request variability), 2.75 (explanation variability), 2.62 (capability variability), and 2.51 (effort variability). These evidences also demonstrate the degrees of influence caused by different kinds of customer variability.

## 5. DISCUSSIONS

From the above analyses, we can obtain several interesting findings. We first summarize the strategic actions with higher implementation levels (the top two or top three strategic actions) for the six types of customer variability.

### (1). Arrival variability

Arrange adequate numbers of staffs and service personnel in the front desk at peak times (CA) (the total mean is 4.10). Employ part-time service personal at peak time (LC) (the total mean is 3.49).

### (2). Request variability

Train employees with the ability of solving varied requests (CA) (the total mean is 3.45). Ensure that enough senior staffs are on hand (CA) (the total mean is 3.35).

### (3). Explanation variability

Arrange sufficient staffs with communication experience (CA) (the total mean is 3.83). Train employees with communication skills (CA) (the total mean is 3.57).

(4). Capability variability

Arrange employees who can adapt to customers' varied abilities (CA) (the total mean is 3.62). Do work for customers (CA) (the total mean is 3.47).

(5). Effort variability

Do work for customers (CA) (the total mean is 3.28). Ensure employees who can compensate for customers' lack of effort (CA) (the total mean is 3.17).

(6). Subjective preference variability

Enhance powerful explanations to customers (LC) (the total mean is 3.81).

Enhance customers' understanding of the service content and standard (LC) (the total mean is 3.57). Ensure staffs that can diagnose differences in customers' subjective preferences and adapt accordingly (CA) (the total mean is 3.44).

There are ten CA actions among the above 13 prior actions. It reflects the fact that hotels prefer the 'classic accommodation' actions. If we compare the overall 43 actions, the six top priorities are noted ' \* '. Among these six actions, there are four CA actions, and two LC actions which are used to reduce the customer's subjective preference variability. It is thus that hotels also like to adopt the 'low-cost accommodation' actions, since these strategic actions will result in significant effects on the reduction of adverse influence by the customer variability, especially the kinds of customer's subjective preference variability. But there is no evidence to point out that the 'classic reduction' actions and the 'uncompromised reduction' actions are preferred by the hotels.

Frei (2006) suggested that service industries need to adopt more LC and UR actions. Besides one LC action used to reduce the effects caused by customer's subjective preference, all the other LC and UR actions, their effectiveness degrees are significantly larger than their implementation levels. These evidences support Frei's suggestion. If the hotels exaggeratedly implement the LC and UR actions, then they will effectively reduce the adverse influence caused by customer variability. Now hotels start to accentuate the implementation of LC actions, but the UR actions are still neglected by hotels. Therefore, we also suggest that hotel industry need to emphasize the 'uncompromised reduction' actions, for examples, 'provide alternative demands to level arrivals without requesting customers to change their decisions'(used to reduce the arrival variability), 'provide easily understood instruction of service items' and 'provide a list of basic service packages', which are used to reduce the explanation variability.

The hotels acknowledge the different influence degrees caused by different types of customer variability. Thus they implement diverse levels of the strategic actions related to different variability types. The overall mean (3.30) of the implementation levels of the strategic actions for the variability of customers' subjective preference is the largest one, it means that hotels very concern the influences caused by this variability. But the hotels don't pay more attention on the implementation of the actions for the effort variability, since the overall mean (2.51) of the implementation levels of the strategic actions for this variability is very low. If we discuss the implementation of individual action, then the implementation levels are very different. Some actions have very high implementation levels, for examples, 'arrange adequate numbers of staffs and service personnel in the front desk at peak times' (the mean of implementation level is 4.10 ), and 'arrange sufficient staffs with communication experience', (mean 3.83), but some actions, such as 'provide limited number of rooms to specific customers', and 'provide distinct services to customers on the basis of their capability' are very low (their means are 1.70 and 1.82 respective).

Based on the analyses in the above section, we can find out that there are many strategic actions with low implementation levels, but they can result in significant effectiveness degrees. Hotels need to re-evaluate these actions, and make the necessary decisions on the powerful actions which are neglected by the hotels. Besides, the hotels need to train the employees more professional skills, for examples, communication skill, products knowledge, emotion control, and facilities operation. As a result, the employees can provide good assistances for customers to reduce the adverse influence of customer variability.

## **6. CONCLUSIONS**

The hotels always encounter a strongly competitive environment. Thus they will adopt some strategies to enhance the quality of service provision, in order to raise the customer loyalty. But the service quality is perceived by the customers (Deming, 1986), which is also influenced by many critical factors (Parasuraman et al., 1985), it is thus that the hotels usually implement some effective actions to reduce the adverse effects of the critical factors.

Hotels usually use the classic actions, especially the CA actions, to reduce the adverse influences caused by the customer variability. Besides the classic actions, Frei (2006) also suggested another two kinds of strategic actions: low-cost accommodation (LC) and uncompromised reduction (UR). From the empirical study we can find out that hotels more prefer the classic actions, the exception is the case of the variability of subjective preference. The most commonly adopted by hotels are two LC actions. Though most LC and UR actions are with lower implementation levels than the CA and CL actions, their positive effectiveness are very significant. These analytic results provide the important messages to the hotels that they need to enhance the implementation levels of the LC and UR actions.

For most of the actions, their effectiveness scores are larger than their implementation score, especially the LC and UR actions. These results reflect that hotels have to raise the implementation levels on these actions, in order to reduce the negative effects caused by the customer variability. Hotels can focus on those actions with significant differences between the effectiveness degree and implementation level.

This research first discusses the complete analyses of the types of customer variability for hotel industry, and then conducts the related empirical study, which makes a valuable contribution to the hotel industry. This search also contributes to the academic study in the area of customer variability. There are some related issues, for examples, employee variability and empowerment, are the critical factors of the service quality and customer loyalty. These issues are the search topics to be studied in the near future.

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