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An Empirical Study for Measuring Information Technology Department Service Quality from Hospitality's Employees in Macau

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Abstract: Business increasingly realizes the importance of service and product quality in order to maintain long-term competitiveness and profitability. This also applies to the hospitality and tourism industries. Currently, information technology plays an important role in the hospitality and tourism industries. Therefore, the Information System (IS) department is essential for business management. Without the IS department providing effective information system services, the employees cannot offer the quality of service to their customers. Due to the multitude of services provided by the IS department, the manager needs to identify the importance and satisfaction of these service attributes from the perspective of the employees. In this study, the services that casino IS employees provide are the main subject of the investigation. The purpose of this research is to identify the improvement priority among these service quality attributes and the questionnaire that was developed has adopted the Important-Satisfaction Model (I-S Model) as the major research method. The result has also demonstrated that three items fall in the Excellent Area; seven items fall in the To-be-improved Area; six items fall in the Surplus Area; and six items fall in the Careless Area. The services in the To-be-improved Area should be assigned the highest priority for improvement.

Key words: Information system (IS) service quality, important-satisfaction model, employee satisfaction

INTRODUCTION

In their efforts to maintain long-term competitiveness and profitability, businesses are increasingly realizing the importance of service and product quality if they want to attract more new customers and retain their old customers (Yang, 2005). Service quality is an estimate of how well the services provided match the customers' anticipations (Lewis and Booms, 1983). Providing superior service quality has been acknowledged as the most effective methods of ensuring that an organization's offering present from some similar competitive offerings (Parasuraman *et al.*, 1991). In addition to the general external customers, many studies have established employees as the 'internal customers' of a company. Therefore, employee satisfaction is as important as customer satisfaction (Nebeker *et al.*, 2001) because employee satisfaction does have a great impact on organizational performance (Chen, 2012).

Currently, information technology has an important role to play in the hospitality and tourism industries. The function of the Information Systems (IS) department is not

just a provider of products, but also a service provider (Pitt *et al.*, 1995). Most of the studies focus on the products rather than the services when measuring IS effectiveness. Without the IS department providing effective information systems service, employees cannot offer the quality of service to their customers. Therefore, the IS manager has the responsibility of maintaining his or her IS department to provide effective service to all employees. However, there are many services provided by the IS department, thus the manager needs to investigate employees' awareness of these service attributes importance and satisfaction among the service they provide to their users.

In this study, the casino employees are the main subject of the investigation, because they are the first line users of information technology products and services. Their satisfaction about the quality of service provided by the department of Information Technology (IT) has a direct impact on their work performance, thereby affecting their customer service levels.

In order to find the improvement priority among these IS service quality attributes, survey questionnaires are

used with the I-S model as the major research method. The result shows that all service quality items fell into four areas: (1) Excellent area (2) To-be-improved area (3) Surplus area (4) Careless area. From the feedback of the employees, we can determine which service categories are important to employees and the services they are not satisfied with. Actions then can be taken to improve the dissatisfaction categories. The goal is to provide guidance to the administrative staff for the enhancement of IS effectiveness.

LITERATURE REVIEW

Service quality: Service quality is most often defined in the customers' perceptions. The better the service quality, the more satisfied the customers. Hence, customers' satisfaction is based on their expectations and perceptions of service quality (Johnston and Lyth, 1991; Ekinci, 2004; Cronin and Taylor, 1992; Christou and Sigala, 2002; Sigala, 2004a, b; Petruzzellis *et al.*, 2006). In terms of how customers actually evaluate service quality, Berry *et al.* (1990) proposed that "consumer perceptions of service quality result from comparing expectations prior to receiving the service and their actual experience of the service". A similar study is taken by Zeithaml (1988) who mentions that "perceived service quality reflects the opinion of the customer regarding the superiority or global excellence of a product or service" (Brochado, 2009).

Some scholars believe that it stems from a comparison of performance perceptions with prior expectations (Parasuraman *et al.*, 1988), while Bolton and Drew (1991) argue that customer (dis) satisfaction is a function of the disconfirmation that results from conflicts between prior expectations and received actual performance. They believe that customer satisfaction will affect customer's assessment of service quality, buying intentions and behavior (Liang and Zhang, 2009). In addition, Cronin and Taylor (1992) argue that it is derived from a comparison of performance with ideal standards or only from perceptions of performance. Although the exact nature of this attitude is still somewhat ambiguous, there seems to be wide consensus that service quality is an important determinant in judging service superiority (Abdullah, 2006).

In a wide diversity of disciplines, customer satisfaction and service quality remain to catch the consideration of researchers and practitioners (Athiyaman, 1997). Service quality and satisfaction related topics, as perceived by customers, have been extensively studied. Parasuraman *et al.* (1985, 1988) conducted research to provide an essential frame for measuring

customer satisfaction for services. The authors believe that this may be the perception of the quality of service, resulting in customer satisfaction and, thus, these scholars apply the gap between customer expectation and the actual perceived experience. In essence, if a customer perceives the service to be of high quality, then the customer will be satisfied (Munteanu *et al.*, 2010). By measuring customer satisfaction, organizations can acquire the information regarding how successful they actually are in providing products or services to their customers.

Service quality in information systems: Due to the rapid development of information technology, many scholars have paid attention to adopting IT for the enhancement of customer service and satisfaction (Dabholkar *et al.*, 1996; Philip and Hazlett, 2001). Many companies and organizations have established information systems for more effective management. From the perspective of company management, information systems have provided an effective means for collecting customer information, which can help the company make managerial decisions in order to improve customer service quality and satisfaction. Therefore, establishing and maintaining an effective information system is essential for the company. Watson *et al.* (1998) pointed out that it is important for managers to evaluate the information system quality on a continuous basis.

Delone and McLean (1992) have pointed out that the success of the information system can be concentrated on system quality, information quality, user satisfaction, system usage, individual impact and organizational impact. They have also indicated that both system quality and information quality can affect the customers' satisfaction. System quality refers to the performance of the information system, such as the execution of time and interface. Information quality refers to the characteristics of the information itself, such as the accuracy and currency. User satisfaction refers to the level of satisfaction which customers have experienced during the operation.

Besides the functionality of the information system, many researchers have pointed out that service quality plays an important role in the success of the information system. Magal (1991) has demonstrated that service quality is the important factor which can affect the effectiveness of the information system. Kettinger and Lee (1994) have also indicated the importance of service quality in information system success. In their research, they adopted the SERVQUAL approach to examine whether SERVQUAL covers all the aspects of the service quality of information systems. In addition,

Pitt *et al.* (1995) have pointed out that service quality should be included in the model of information system success, which can affect the system usage and user satisfaction. For instance, in the hospitality industry, the information center should maintain the hardware and software of the organization, providing network service and IT training to employees. All the processes require interaction with the customer group, which indicates the information system has contained a service role in the company operations and the service quality should be included in the measurement of the information system success (Pitt *et al.*, 1995). Landrum and Prybutok (2004) have proposed a modified SERVQUAL instrument to determine how effectively it measures the service quality within the information service industry. The result has indicated that service quality is an important factor in IS success. Due to Watson *et al.* (1998) who have indicated the importance of service quality, it is essential for Macau casinos to improve the service quality of the information systems and to maintain this quality on a consistent basis.

Service quality measurement in information systems: In order to measure the perceptions of service quality, some authors recommended that the service quality model results from the assessment of performance perceptions with expectations (Parasuraman *et al.*, 1988). Munteanu *et al.* (2010) said service quality can be distinguished from satisfaction since quality is a general attitude while satisfaction is linked with diverse experiences in the services area. By measuring customer satisfaction, service providers can acquire the information regarding how successful it is actually providing their product or service to the market.

The SERVQUAL model developed by Parasuraman *et al.* (1985) and refined in 1988, as quantitative multiattribute measurements, is the most commonly used method applied to measure service quality. This model defines service quality using five dimensions: tangibles, reliability, responsiveness, assurance and empathy. It has a 22-item scale for measuring service quality and is grouped into these underlying five dimensions. The SERVQUAL questionnaire presents the respondent with a series of service attributes which they rate using a Likert-type scale response format. The results are based on subtracting customers' expectation scores from perception scores with respect to the 22 items. It has attracted the most attention claiming to measure the relevant dimensions of the perceived quality across all service industries (Ford *et al.*, 1999). The SERVQUAL model (Parasuraman *et al.*, 1985) is the best-known service quality measurement model. It measures the gap between customer perceptions and expectations of service quality to determine perceived service quality.

Some studies apply the SERVQUAL method to conduct customer satisfaction surveys, except that they replace the expectation values with importance values. However, Yang (2003b) found that "the importance and expectation values were not synonymous". In addition, Chen *et al.* (2006) also conducted a customer satisfaction survey in business that showed that "the importance and expectation values are not equivalent; therefore expectation values should not be replaced with importance values". Besides, respondents have difficulties in answering the SERVQUAL questionnaire because of the limitation of its questionnaire design (Yang, 2003b).

Many studies have applied importance and satisfaction surveys rather than the SERVQUAL model to analyze customer satisfaction (Yang, 2003b). For example, the Important-Performance Analysis (IPA) and Important-Satisfaction (I-S) Model. For the above reasons, this research applied the I-S model rather than SERVQUAL to analyze the service quality provided by the IT department in Macau's casino.

Important-satisfaction model (i-s model): The I-S Model was developed by Yang (2003a). This model is illustrated in Fig. 1. It is used to analyze the data by defining quality attributes that customers recognize as important (Yang, 2005). The resulting service quality attributes will fall into the model in one of these four areas: (1) Excellent area (2) To be improved area (3) Surplus area (4) Careless area and then improvement strategies are considered based on the areas of each item. The instructions below clarify the four areas:

- **Area I: Excellent area:** In this area, customers think the services are critical and they are satisfied with the services. Therefore the services provided in this area should continue maintained at this level
- **Area II: To-be-improved area:** The services are considered important to customers but they are not satisfied with the services. The services in this area should be improved and prioritized first
- **Area III: Surplus area:** The services in this area are not deemed important by customers but they are satisfied with these services. Therefore no action is needed unless there are other factors for consideration
- **Area IV: Careless area:** The services in this category are not important to the customers and they are also not satisfied with these services. Although customers are not satisfied, these services do not need additional resources and time for improvement since they are not important to the customers

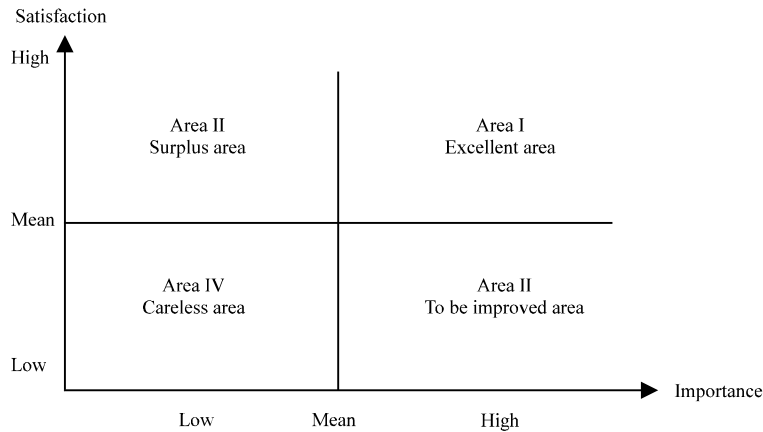


Fig. 1: Important-Satisfaction Model (I-S Model) Source: Yang (2003a)

The study aims to evaluate the performance of the IS department in Macau’s casino by surveying employees’ satisfaction. The result can provide casino administrators with some suggestions for improving their IS department performance.

EMPIRICAL STUDY

Questionnaire design and structure: The questionnaire was based on: (1) A review of the literature (Jiang *et al.*, 2002; Van Dyke *et al.*, 1997; Pitt *et al.*, 1995) (2) Discussions with six experts (including IT management consultants) and discussions with 10 employees in the casino industry. The final questionnaire was divided into the following three parts:

- **Demographics:** Gender, age, education, income, region, year of service, IT products using experience and require IT products for working
- **Importance survey:** Responds requested on a Likert-type scale of 1 to 5 (with 1 representing ‘extremely unimportant’ and 5 representing ‘extremely important’)
- **Satisfaction scale:** Responds requested on a Likert-type scale of 1 to 5 (with 1 representing ‘extremely dissatisfied’ and 5 representing ‘extremely satisfied’)

Demographics of sample: The questionnaire was distributed to casino employees in Macau. In all, 400 questionnaires were distributed and 326 were returned (a response rate of 82%). The demographics of the final sample are shown on Table 1. The majority of respondents (63%) were female and most (36%) were aged 19-25 years. Almost half (53%) had over 4 years IT using

Table 1: Demographics of sample (n = 326)

Characteristics	Frequency	Percentage
Gender		
Male	118	36.20
Female	208	63.80
Age		
19-25	117	35.89
26-35	68	20.86
36-45	56	17.18
46-55	80	24.54
Over 55	5	1.53
Education degree		
Below primary school	5	1.53
Middle school	101	30.98
High school	95	29.14
University	121	37.12
Research department or above	4	1.23
Income Level		
Below MOP\$8,000	74	22.70
MOP\$8,001-\$13,000	130	39.88
MOP\$13,001-\$18,000	49	15.03
MOP\$18,001-\$23,000	34	10.43
Over MOP\$23,001	39	11.96
Region		
China	49	15.03
Hong Kong	4	1.23
Macau	258	79.14
Taiwan	2	0.61
Others	13	3.99
Years of service		
Below 1 year	81	24.85
1~2 years	63	19.33
2.1~3 years	39	11.96
3.1~4 years	22	6.75
Over 4 years	121	37.12
IT products using experience		
None	52	15.95
1 year	34	10.43
2 years	42	12.88
3 years	23	7.06
Over 4 years	175	53.68
Require IT for products working		
Yes	255	78.22
No	71	21.78

experience. And, the majority of respondents (783%) required IT products when they were working.

Importance and satisfaction ranking: ‘IS has up-to-date hardware and software (NO1)’, ‘Employees of IS understand the specific needs of its users (NO22)’ and ‘IS has the users’ best interests at heart (NO21)’ were rated as the top three important items in this research. In addition, items of ‘IS employees are consistently courteous with users (NO16)’, ‘IS employees have the knowledge to do

their job well (NO17)’ and ‘Users will feel safe in their transactions with IS’s employees (NO15)’ have demonstrated outstanding performance according to the satisfaction level. The most dissatisfied item was ‘IS employees are never be too busy to respond to users’ requests (NO13)’, followed by the item ‘IS’s physical facilities are visually appealing (NO2)’ and the item ‘When IS promises to do something by a certain time, it does so (NO5)’, as noted on Table 2.

Table 2: Importance and Satisfaction Ranking

No.	Importance	Ranking	Satisfaction	Ranking
1	4.18	1	3.44	4
2	3.66	22	3.27	21
3	3.79	21	3.36	7
4	3.86	20	3.30	18
5	4.17	19	3.28	20
6	4.10	18	3.33	12
7	4.03	17	3.33	13
8	4.10	16	3.33	14
9	3.89	15	3.32	16
10	3.90	13	3.40	5
11	4.01	14	3.29	19
12	3.92	11	3.38	6
13	3.70	12	3.24	22
14	4.00	10	3.34	11
15	3.99	9	3.48	3
16	4.14	8	3.50	1
17	3.94	7	3.49	2
18	3.94	6	3.33	15
19	3.97	4	3.35	9
20	3.81	5	3.36	8
21	3.92	3	3.35	10
22	3.87	2	3.32	17

I-S MODEL ANALYSIS

The I-S Model analysis has demonstrated that the importance threshold equals 3.95, while the satisfaction threshold equals 3.35. These thresholds define the four areas. Items are located in the four areas as described below Fig. 2:

Excellent area (three items):

- IS has up-to-date hardware and software (No. 1)
- Users will feel safe in their transactions with IS’s employees (No. 15)
- IS employees are consistently courteous with users (No. 16)

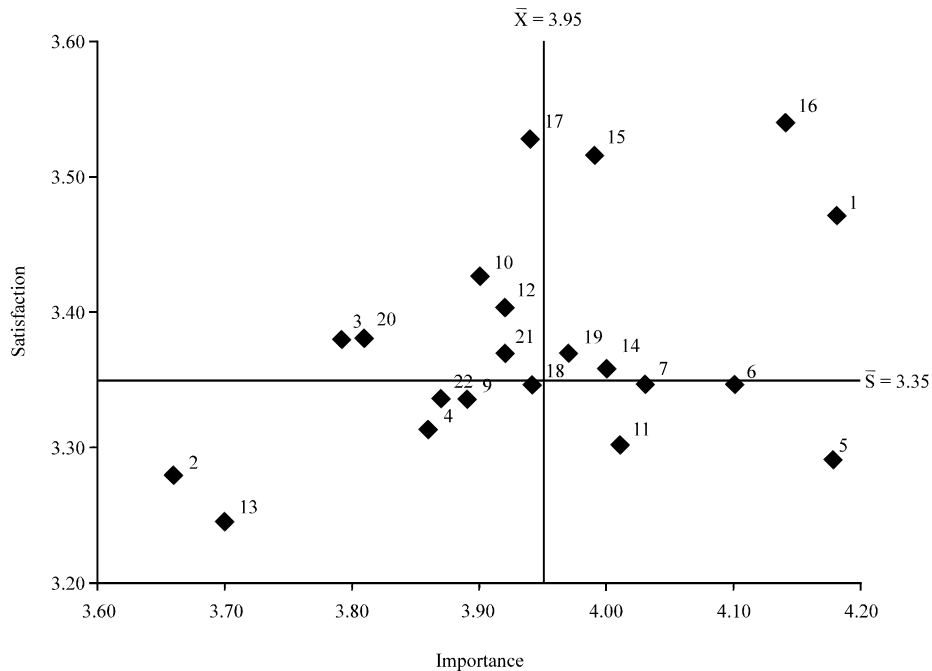


Fig. 2: Important-Satisfaction Model (I-S Model) of case study

To-be-improved area (seven items):

- When IS promises to do something by a certain time, it does so (No. 5)
- When users have a problem, IS shows a sincere interest (No. 6)
- IS is dependable (No. 7)
- IS provides its services at the times it promises to do so (No. 8)
- IS employees give prompt service to users (No. 11)
- The behavior of IS employees instills confidence in users (No. 14)
- IS gives users individual attention (No. 19)

Surplus area (six items):

- IS's employees are well dressed and neat in appearance (No. 3)
- IS tell users exactly when services will be performed (No. 10)
- IS employees are always willing to help users (No. 12)
- IS employees have the knowledge to do their job well (No. 17)
- IS has employees who give users personal attention (No. 20)
- IS has the users' best interests at heart (No. 21)

Careless area (six items):

- IS's physical facilities are visually appealing (No. 2)
- The appearance of the physical facilities of IS is in keeping with the kind of services provided (No. 4)
- IS insists on error-free records (No. 9)
- IS employees are never be too busy to respond to users' requests (No. 13)
- IS gives users individual attention (No. 18)
- Employees of IS understand the specific needs of its users (No. 22)

DISCUSSION

The department of information plays a very important role in the operation of a company. The use of information technology products can enhance the overall productivity and reduce labor intensiveness. Therefore, IT department employees of the company must provide information services which, through user satisfaction, will be able to enhance the competitiveness of the enterprise. The I-S Model is a simple management decision-making tool. The result has demonstrated that three items fell in the Excellent area while seven items fell in the

To-be-improved area. In addition, six items fell in the Surplus area and six items fell in the Careless area. This study found seven to be improved items, which indicates that employees of the organization are not satisfied with these important attributes. The company must review and improve these attributes in order to meet the needs of employees, considering that satisfied employees will have satisfied customers. For the items that fell in the To-be-improved Area, the company must deeply review why these items fell into this area. Perhaps it is due to a lack of enterprise equipment or insufficient service personnel education and training which is leading to the company's employees not being satisfied with the quality of IS services being provided.

In addition, it is also worth continuing to discuss the four improvement items. If the company has sufficient resources, these items can be improved at the same time. The company needs to set the improvement priority among these items. Therefore, the company can discuss with scholars, experts and/or top management to review and confirm the improvement priorities. The company can utilize resources where needed and focus on the most needed improvement items, thereby maximizing the use of resources in the operation.

CONCLUSION

The information technology department performs a very important role in hospitality industries. Without providing adequate IT service quality, casino employees cannot provide good service quality to their customer. However, there are a variety of service items provided by the IS department and there is a need to identify the gap between importance and satisfaction, especially in consideration of limited resources. This study focuses on casino employees as customers and evaluates their levels of satisfaction or dissatisfaction with the services provided by the Information Technology department. The I-S model was used as the main research tool. The results of the study show the following four regions: (1) Excellent area, (2) Need improvement area, (3) Surplus area and (4) Careless area. The result has also demonstrated the items 'When IS department promises to do something by a certain time, it does so', 'IS department is dependable', 'IS department employees give prompt service to users' and 'IS department has operating hours convenient to all its users' need to be improved. Thus, the results of this study can be considered as the basis to help executive decision makers in the casino to develop new strategies.

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