Service Quality, Customer Satisfaction and Performance Evaluation of BAS Employees of Kaohsiung City, Kaohsiung County and Pingtung County

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Abstract：This study aims to explore the relationship among service quality, customer satisfaction and performance evaluation of budget, accounting and statistics (BAS) employees by conducting a survey on intra-agent non-BAS employees and the citizens of Kaohsiung City, Kaohsiung County and Pingtung County. The survey shows that customer satisfaction perceived by citizens is significantly higher than that of intra-agent employee. In the seven performance evaluation items, more than 50% of the respondents agreed that service quality is correlated with "work intelligence & official document operation", "service attitude", and "moral character and virtue". Moreover, in the relationship between customer satisfaction and performance evaluation, "work intelligence & official document operation" is correlated with "service attitude". The empirical results of this study can provide strategic suggestions for future studies or the industry.

1. Introduction

The competitiveness between the international and domestic companies and the government has a surge of development in the 21st century. The competitiveness of a country is the main factor that determines its continuous management and development. Thus, good administrative efficiency and service quality were used as standards. The government promotes different types of public services strategies related to the Directorate General of Budget, Accounting and Statistics, Executive Yuan (BAS unit). The BAS unit is a branch of the government that is in charge of the budgetary, accounting and statistics that promotes a healthy financial management to ensure that the national resources can make the most of the money available and develop maximum benefits. In 1993, the US government established National Performance Review Committee (NPR) to implement the vision "Creating a Government that Works Better and Costs Less". In 2007, the Executive Yuan implemented the "Government Service Innovation Program" hoping to find the highest value of the services using only the minimal portion of the whole resources of the government. Therefore, the BAS unit can't make the most effective distribution of the limited resources or provide effective audit control on the use of the budgets which made the costs of the national service increase but can't satisfy the needs of the customers. This is the cause of the complaints and inconvenience of the people which made the service quality and satisfaction of the people toward the government decline. Thus, the purposes of this study are:

1. to explore the relationships among the service quality, customer satisfaction and performance evaluation of BAS employees.
2. to provide suggestions and references for BAS authorities in promoting service quality, customer satisfaction and performance management

2. Review of Related Literature
2.1   Service Quality
1. Definition of Service Quality

Levitt (1972) defined service quality as the result of the services reaching the standard. Parasuraman, Zeithaml, and Berry (1985) defined the good or bad service quality as "the difference between the expectation of the customer on the service to be provided and perception of the actual service obtained. In short, "service quality = expected service − cognitive service". Cronin et. al. (1992) argued that service quality should be measured directly by performance and should not be compared with the standard of the expected service since it is formed based from the performance of the service system. Thus, it is equal to the service quality actually felt or experience. Service quality can be measured by the customer satisfaction performance of the accepted service. In other words, service quality is the antecedent of customer satisfaction and customer satisfaction has a significant effect on the repurchase intention or the intention to be served

again. Wakefield (2001) defined service quality as the difference between the expected service and the cognition of the accepted service and it is divided into tangible and intangible service. However, tangible service does not only include the actual service outputted, it also includes the appearance of the facilities, equipment and personnel. Moreover, intangible service indicates the service showed or displayed including trust, response, guarantee and empathy.
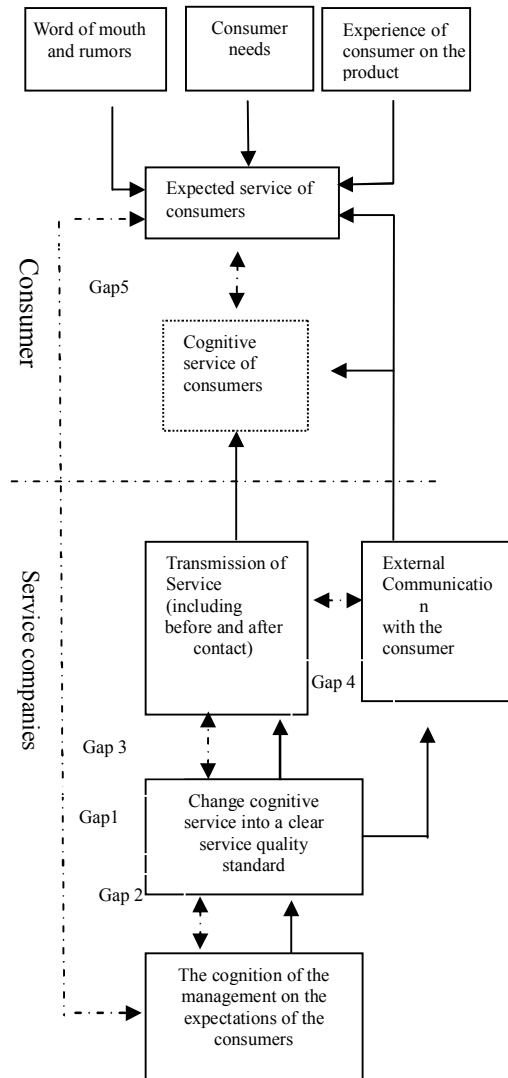

Figure 2-1 PZB's Conceptual Model of Service Quality

Source: Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its implications for Future Research, *Journal of Marketing*, Vol.49, 44.

2. PZB Model

The Conceptual Model of Service Quality of Parasuraman, Zeithaml and Berry (1985), simply called PZB model, was based on the survey Lovelock (1983) conducted on the management of the four different types of service industry namely banks, credit card companies, stockbrokers, and product repairs hoping to search for the cause and the best solution for the service quality problem through the observation of the customers and the management of the service industry. The Conceptual Model of Service Quality is also known as the Gap Theory, as shown in Figure 2-1.

3. Dimensions of Service Quality

Parasuraman, Zeithaml, and Berry (1985) developed a basic service quality SERVQUAL scale based from the difference between the actual cognition of customers on service standard and the expected service standard of the customers. After a few years, Cronin et. al. (1992) proposed of using performance in creating a SERVPERF scale to measure service quality. The difference between SERVQUAL and the revised SERVQUAL are the dimensions used for measurement. The ten dimensions from the original scale were reduced to five namely tangible, reliability, responsiveness, assurance and empathy, as shown in Table 2-1.

Table 2-1 The relationship between the five and ten dimensions of service quality

Dimensions	1985	Dimensions	1988
Tangible	Indicates the reality portion of the service including hardware and service personnel's appearance.	Tangible	Indicates the hardware, facilities, tools and the appearance of the service personnel.
Reliability	Can be trusted to have the capability and to have the accuracy to execute the agreed upon service.	Reliability	Is reliable to have the capability and the accuracy to execute the agreed upon service.
Responsiveness	The intention of the employees to help customers and immediately provide services.	Responsiveness	The intention of the service personnel to immediately and rapidly provide service.
Competence	Possesses the skills to execute the necessary service.	Assurance	The service personnel have the professional knowledge

Credibility	Is credible and can accurately execute the agreed upon service.	and etiquette confidence to obtain the trust, belief and peace of mind of the consumers. It includes providing professional service skills and techniques, professional attitude and respect and can effectively communicate with the service personnel to assist the attendants to obtain the most benefit.
Courtesy	The service personnel are polite, respectful, attentive and friendly toward the customers.	
Security	The customer and his/her belongings are safe and secured	
Understanding	Understand the needs of the customers	
Communication	Has the ability to use the language consumers can understand in communicating and is willing to listen to the ideas or suggestions of the consumers.	Empathy — The service personnel are genuinely concern and understand the personal problems of the consumers. It includes the friendliness and security when providing the service and understands the attitude and ability needed by the people being serviced.
Access	The personnel are easy to get close to and the service facilities including time, location and methods are more convenient for the consumers.	

Source: Zeithaml, Berry & Parasurman (1988). Communication and Control Processes in the Delivery of Service Quality. *Journal of Marketing*, Vol.52, 35-48.

Buttle (1996) indicated that in measuring service quality, the SERVQUAL measurement scale proposed by Parasuraman, Zeithaml, and Berry (1988) is recognized as the most valuable measuring tool in the industry and academe. This measurement scale uses the point of view of consumers to evaluate their expectations on the service quality of similar service providers and the differences among the cognitive performance of specific service providers. The SERVQUAL measurement scale is consists of 22 items which measures the cognitions and expectations of the consumers on the five service

quality dimensions. The dimensions and assessment items are shown in Table 2-2.

Table 2-2 The Dimensions and Assessment Items of SERVQUAL

Dimension	Assessment Items
Tangible	1.This company possesses modern facilities 2. The appearance of the facilities of this company can attract people 3.The employees of this company dresses neatly and orderly 4.This company and its service-related attachments can attract people
Reliability	5.The company can fulfill all commitments and can complete it promptly 6. When problem occurs, this company is more than welcome to solve the problem 7. This company can provide a complete service on the first try 8. This company can finish the service on schedule 9. This company accurately save the service records
Responsiveness	10.The company informs the customer when they can provide the service. 11.The employees of this company can rapidly provide the appropriate services. 12.The employees of this company are willing to assist the customers. 13.The employees of this company do not have the problem of not being able to conduct the service on time because they are busy.
Assurance	14.The behaviors of the employees of this company can be trusted. 15.Customers can feel that doing transactions with this company is safe. 16.The employees of this company are polite to customers. 17.The employees of this company can obtain the appropriate support to provide better services.
Empathy	18.This company can provide customers with individual care and attention 19.The employees of this company can provide customers with individual care and attention 20.The employees of this company understand your needs 21.The best interest of the customer is the priority of this company 22.The service time of the company conforms to the needs of the customers

Source: Parasuraman, A., Zeuthaml, V.A., & Berry, L.L. (1988). Communication and Control Process in the Delivery of Service Quality, *Journal of Marketing*, vol.52, 35-48

2.2 Relationship between Service Quality and Customer Satisfaction

Service quality is the leading reaction or variable of customer satisfaction (Bolton & Drew, 1991; Cronin et, al., 1992; Anderson & Sullivan, 1993; Spreng & Mackoy, 1996). In other words, higher service quality standard improves customer satisfaction. Oliver (1993) and Rust and Oliver (1994) also proposed the argument that service quality decides satisfaction. In addition, satisfaction will affect the future perception on quality in a certain

level. Hurley and Estelami (1998) believed that service quality and customer satisfaction has causal relationship and will affect future purchase intentions. However, the conclusion obtained by Cronin and Taylor (1994) pointed out that these two constructs have no sequential regression relationship. Zeithaml and Bitner (2000) indicated that the difference between "perceptive service quality" and "customer satisfaction" is that service quality is affected by tangible, reliability, responsiveness, assurance and empathy, these 5 constructs while customer satisfaction is affected by service quality, product quality, price, situational factor and personal factor, these 5 constructs. Service quality and perceptive customer satisfaction can be regarded as a separate service level and can also be seen as an integral standard.

2.3 Related Literatures on Performance Evaluation

The earliest concept of performance evaluation is from the business world. Scholar, Peter Druker(1993) believed that performance evaluation is the reason for existence of the business industry and enhancing performance is the purpose of the management. According to the argument of Kaplan and Norton (1996), the Balance Score Card (BSC) combines the mission, vision and strategy formulated by the enterprise and the key performance evaluation indicators. The BSC is a comprehensive framework that assists the management in changing the company's vision and strategy into a set of sequential coherent performance measurement. It consists of four dimensions: finance, customers, internal process, and growth and learning. The concern of the performance evaluation of the government is to obtain objectives of the policies and how to effectively and efficiently implement performance evaluation. The "Performance Evaluation on Policy Implementation of Agencies under the Executive Yuan" in 2001, also called the "Performance Evaluation on Policy Implementation" is divided into the evaluation of the strategic performance goals and annual performance goals. The BSC approach used in the performance evaluation for the BAS personnel and the enterprises are different. The BAS personnel adopted the fourth point of the "Assessment Regulations for the Executive Yuan and the Civil Servants of the Subordinate Units" on the work performance evaluation. The seven items of the evaluation include work knowledge and document performance, innovation research and simplified process, service attitude, moral integrity, leadership and coordination ability, annual work plans and language skills.

3. Research Methodology

This study adopted the proposed and revised service quality measurement model of Parasuraman, Zeithaml and Berry in the year 1985, 1988 and 1992, respectively. Tangible, reliability, responsiveness, assurance and empathy are the five dimensions used to measure service quality framework. It used SPSS 12.0 for windows for statistical analysis.

3.1 Research Hypotheses

Aside from understanding the demographical statistics (gender, age, educational attainment, occupation, position, seniority, marital status, income, service district), this study also deeply understand whether the service quality of the Directorate General of Budget, Accounting and Statistics, Executive Yuan has an effect on the people. It conducted the analysis based on the difference in their perception on tangibility, reliability, responsiveness, assurance and empathy.

H_1: The demographical variables have no significant effect on service quality.

H_2: The demographical variables have no significant effect on customer satisfaction.

H_3: The service quality and customer satisfaction have positive effect.

3.2 Questionnaire Design

1st Part

1. Service Quality

To understand the expectations of the respondents on the service quality of the BAS personnel, the design of this measurement scale adopted the scale of Parasuraman, Zeithaml and Berry (1988), the three scholars from the University of Cambridge, proposing the 5 dimensions of service quality with 22 questions. This study also refer to the questionnaire of Chang (2003) and revised the 22 questions into 25 according to the characteristics of the BAS personnel, as shown in Table 3-1. Five-point Likert scale was used for measurement (1=strongly disagree, 2=disagree, 3=average, 4=agree, 5=strongly agree).

2. Performance Evaluation

The questionnaire is designed according to the regulations of Article 4 in assessing the Executive Yuan and its personnel and also according to the understanding of their jobs. The respondents were asked to check the items on the category that is most relevant to their work to serve as the service quality performance evaluation (if checked, it means 1=agree and means 0= disagree if not checked).

2nd Part: Customer Satisfaction

This part examines on the satisfaction of the

people on the service quality of the BAS personnel. Five-point Likert scale was used for measurement (1=strongly disagree, 2=disagree, 3=average, 4=agree, 5=strongly agree). The questions are shown in Table 3-1.

Table 3-1 Questions of the Service Quality Dimensions

Dimension	Questions
Tangible	01. You believe that BAS personnel can fully use modern IT facilities in their daily works. 02. You are satisfied with the overall operation of the BAS system. 03. You think their office is clean, beautiful and comfortable. 04. You believe that the BAS personnel dress neatly and orderly. 05. The office sign is clearly marked.
Reliability	06. You believe that the BAS personnel can fulfill the work they promised you on the scheduled time. 07. When you have doubts, the BAS personnel can assurance you that they can solve your problem. 08. You believe that the BAS personnel are reliable. 09. You believe that the BAS personnel can provide the necessary service within the promised time. 10. You believe that the documents given to the BAS personnel are correctly saved and are completely secured.
Responsiveness	11. You believe that the BAS personnel will tell you correctly when they will finish the job. 12. You believe that the BAS personnel are always willing to provide the services and can provide it in the right time. 13. You believe that the BAS personnel are not too busy to rapidly respond your request. 14. When you have complaints, the BAS personnel will gladly accepts and deal with it carefully. 15. You believe that the BAS personnel have positive service attitude.
Assurance	16. You believe that the BAS personnel have the sufficient professional image that made you trust him/her. 17. You feel at ease with the BAS personnel that's handling your affairs. 18. You believe that the attitude of the BAS personnel is friendly and polite. 19. You believe that the BAS personnel are courteous and have telephone manners. 20. You believe that the BAS personnel can obtain the enough authorization to do a good accounting job.
Empathy	21. You believe that the BAS department can provide you with individual care and attention. 22. You believe that the BAS personnel can provide you with individual care and attention. 23. The BAS personnel understand your individual needs. 24. The best interests of the people are the priority of the BAS department. 25. The service time of the BAS department conforms to the needs of the people.

Table 3-2 Dimension and Questions of Customer Satisfaction

Dimensions	Questions
Customer satisfaction	1. Overall, I am satisfied with the space environment. 2. Overall, I am satisfied with the professional quality of this department. 3. The service of the BAS personnel makes you safe and satisfied because you know they will protect your rights. 4. Overall, I am satisfied with the service attitude of this department. 5. Overall, I am satisfied with the service performance of this department.

4. Empirical Analysis
4.1 Descriptive Analysis

The subjects of this study are the non-BAS personnel and the citizens of Kaohsiung City, Kaohsiung County and Pingtung County. A total of 2,400 questionnaires were distributed. 1,412 questionnaires were returned having a return rate of 58.83%.

2. Demographical Statistics of the Respondents

With regards to gender, 639 respondents (45.30%) are male and 773 respondents (54.70%) are female. Majority of the respondents, 613 respondents (43.40%), are around 40-49 years old. With regards to education, 839 respondents (59.40%) are either junior college or bachelor degree holders. As for occupation, 814 of the respondents (57.60%) are civil servants while 598 respondents (42.40%) are not civil servants. Among the respondents, 1,212 respondents (85.80%) are ordinary personnel while 200 respondents (14.20%) are department heads. A total of 515 respondents (85.80%) have been working for 11 to 15 years during the survey process. 1,111 respondents (78.7%) are married. As for income, 633 respondents (44.8%) have an income between NT 20,000 to NTD 40,000. As for service district, Pingtung County has the most respondents of 712 people (50.4%), next is Kaohsiung County with 463 respondents (32.8%) and Kaohsiung City with 237 respondents (16.8%).

3. Descriptive Statistics of the BAS Personnel's Service Quality

This study designed a 25-question survey to explore on the service quality of the BAS personnel. The study divided the 5 dimensions into 3 attitude intentions namely "negative attitude" which include "strongly disagree" and "disagree", "neutral attitude which include "average" and "positive attitude"

which include "agree" and "strongly agree".

This study discovered that majority of the respondents have a positive attitude (43.6% to 64.6%) on the service quality of the BAS personnel and the mean for "agree" is also between 3.38 to 3.73 among which the question that the respondents agree the most on the service quality of the BAS personnel is "you believe that BAS personnel can fully use modern IT facilities in their daily works (64.6%). From the minority "negative attitude" respondents (5.0% to 15.7%), it was found that the respondents were unsatisfied with their service quality because of the questions "considers the convenience of the majority and decide the working time" (15.7%), "understands your individual needs" (14.7%) and "provides individual care" (12.8%). Furthermore, about 28.1% to 43.6% of all the respondents were "neutral" respondents. This shows that the respondents hope that the BAS personnel can improve on some of the items.

4. Descriptive Statistics of the Customer Satisfaction on BAS Personnel

This study divided the 5 customer satisfaction questions on the BAS personnel into 3 types of attitude intention namely "negative attitude" which include "strongly disagree" and "disagree", "neutral attitude" which include "average" and "positive attitude" which include "agree" and "strongly agree". The results discovered that 10% (4.0% to 9.8%) of the respondents showed negative attitudes on the questions "I am satisfied with the service attitude of the department" (9.8%) and "I am satisfied with the service performance of the BAS department" (8.4%). 30% of the respondents showed neutral attitude on the questions "I am satisfied with the professional quality of this department" (34.8%) and "I am satisfied with the space environment" (37.8%).

This study found that majority of the respondents (57.4% to 60.7%) is satisfied with the BAS personnel. Moreover, the mean (between 3.63 to 3.66) is mostly on the side of "agree" among which majority of the respondents agreed on the question "the service of the BAS personnel makes you safe and satisfied because you know they will protect your rights" (60.6%).

5. The Descriptive Statistics of the BAS Personnel's Service Quality and Performance Evaluation

This study explored on the performance evaluation (7 items) of the respondents on the BAS personnel through the 25-item questionnaire and more 50% of the respondents agree with the screening conditions of the performance evaluation. In evaluating work knowledge, "you believe that the BAS personnel can fulfill the work they promised

you on the scheduled time" occupied 62.39%, "when you have doubts, the BAS personnel can assurance you that they can solve your problem" occupied 56.59% and "you believe that BAS personnel can fully use modern IT facilities in their daily works" occupied 52.30%. Thus, respondents agreed that these questions can be used to evaluate the work knowledge under performance evaluation. In evaluating service attitude, "you believe that the BAS personnel are not too busy to rapidly respond your request" occupied 56.59%, "you believe that the BAS personnel are always willing to provide the services and can provide it in the right time" occupied 56.16%, "when you have complaints, the BAS personnel will gladly accepts and deal with it carefully" occupied 56.09%, "you believe that the BAS personnel are reliable" occupied 53.68% and "you believe that the BAS personnel will tell you correctly when they will finish the job" occupied 50.14%. Thus, respondents agreed that the following questions above can be used to evaluate service attitude. Under moral integrity, "you believe that the BAS personnel can fulfill the work they promised you on the scheduled time", occupying 51.77%, is agreed upon by the respondents that can be used as an evaluation of moral integrity. This study found that "work knowledge and document performance", "service attitude" and "moral integrity" are related.

6. The Descriptive Statistics of the BAS Personnel's Performance Evaluation and the People's Customer Satisfaction

This study furthered explored on the performance evaluation (7 items) of the respondents on the BAS personnel through the 5 questions on customer satisfaction and more 50% of the respondents agree with the screening conditions of the performance evaluation. In service attitude, "the service of the BAS personnel makes you safe and satisfied because you know they will protect your rights" occupied 63.17%, "overall, I am satisfied with the service performance of this department" occupied 63.10% and "overall, I am satisfied with the space environment" occupied 52.69%. Thus, respondents agreed that the following questions above can be used to evaluate the service attitude under performance evaluation. In work knowledge, "overall, I am satisfied with the professional quality of this department, occupying 55.38% is agreed upon by the respondents that can be used as an evaluation of work knowledge. This study found that "work knowledge and document performance" and "service attitude" are related in customer satisfaction and performance evaluation.

4.2 Validity and Reliability Analysis
4.2.1 Validity

This study adopted the service quality dimensions in SERVQUAL of Parasuraman, Zeithaml and Berry (1988) in the design of the questionnaire and revised the questions according to the needs of this study. Before the actual distribution of the questionnaires, 50 questionnaires were first distributed for pilot test to guarantee that the questionnaire has an appropriate degree theoretically and has standard content validity. This questionnaire is sure to be appropriate in measuring the service quality of Kaohsiung City, Kaohsiung County and Pingtung County.

4.2.2 Reliability

This study adopted the standard of Nunnally (1978) that Cronbach's α should be greater than 0.7 for it to have the appropriate degree of reliability. Value less than 0.35 is considered low reliability and dimension should be rejected. If the Cronbach's α is between 0.35-0.7, it is accepted. This study used Cronbach's α > 0.7 as the standard. The Cronbach's α for the dimensions tangible, reliability, responsiveness, assurance, empathy and customer satisfaction are 0.87, 0.93, 0.93, 0.93, 0.93 and 0.92, respectively.

4.3 Analysis of Variance (ANOVA)

This part mainly explores on the significant difference of the demographic variables on the service quality and customer satisfaction of BAS personnel. It adopted t-test and one-way ANOVA to test on the relationship.
1. The differential analysis of gender on the service quality and customer satisfaction of BAS Personnel

With regards to gender, the F-value of Levene's test showed that service quality and customer satisfaction did not obtain significant standard (P > 0.05). This shows that there is no big difference in the perspective of male and female respondents, as shown in Table 4-1.

Table 4-1 The t-test Analysis of Gender on the Service Quality and Customer Satisfaction of BAS Personnel (n = 1,412)

dimension	mean		Standard deviation		Levene's Test for Equality of Variances		t-test for Equality of Means	
	Male	Female	Male	Female	F-value	P-value	T-value	P-value
Service quality	3.60	3.61	0.68	0.70	1.40	0.24	-0.35	0.72
Customer satisfaction	3.63	3.66	0.74	0.75	0.20	0.66	-0.72	0.47

**P <0.05 shows significant standard (two-tailed)

2. The differential analysis of service district on the service quality and customer satisfaction of BAS Personnel

After the three service district, Pingtung County, Kaohsiung County and Kaohsiung City undergo one-way ANOVA, the results of the Levene's test showed that these three service districts has no significant standard on the service quality and customer satisfaction of the BAS personnel (P > 0.05), as shown in Table 4-2. The results of the ANOVA shows that service district has no significant difference on the satisfaction toward BAS personnel (P > 0.05). Thus, this shows that the service district of the respondents does not affect the service quality and customer satisfaction of the BAS personnel.

Table 4-2 The Differential Analysis of Service District on the Service Quality and Customer Satisfaction of BAS Personnel

	Service District						
	mean			Levene's Test for Equality of Variances		ANOVA	
	Pingtung County	Kaohsiung County	Kaohsiung City	F-value	p-value	t-value	p-value
Service quality	3.64	3.57	3.55	0.21	0.81	2.14	0.12
Customer satisfaction	3.66	3.65	3.59	0.08	0.93	0.82	0.44

** P <0.05 shows significant standard

4.4 Correlation Analysis

The results of the Pearson's correlation analysis is shown in Table 4-3. The results showed that tangible, reliability, responsiveness, assurance and empathy of the service quality and customer satisfaction has obtain significant standard (P < 0.01) and were all greater than 0. This shows that the independent variables and customer satisfaction, the dependent variable, are positively related.

Table 4-3 Mean, Standard Deviation and Correlation Coefficient of the Dimensions of Service Quality and Customer Satisfaction

Dimension	mean	SD	Correlation analysis					
			Customer satisfaction	Tangible	Reliability	Responsiveness	Assurance	Empathy
Customer satisfaction	3.62	0.73	1					
Tangible	3.65	0.65	0.677***	1				
Reliability	3.64	0.78	0.835***	0.726***	1			
Responsiveness	3.58	0.79	0.865***	0.671***	0.846***	1		
Assurance	3.64	0.81	0.822***	0.673***	0.799***	0.831***	1	
Empathy	3.44	0.82	0.799***	0.596***	0.735***	0.822***	0.762***	1

* P <0.05 shows significant standard (two-tailed); ** P < 0.01 shows significant standard (two-tailed), *** P < 0.001 shows significant standard (two-tailed)

4.5 Regression Analysis

Hair et. al. (1995) pointed out that the bigger the

absolute value of the standardized regression β coefficient, the better the predictive power where positive and negative value represents the direction of the relationships of predictors and criterion variables. In the so-called regression analysis model, the explainable variance divided by the value of the total variance is called coefficient of determination (R^2). R^2 explains the proportion of the variance on the total variance which is also the ratio of the criterion variable explained by the independent variable. R^2 also reflects the goodness-of-fit of the linear regression model of the independent and dependent variables (Anderson et. al., 2010).

This study focused on the effect of the dimensions tangible, reliability, responsiveness, assurance and empathy of service quality has on customer satisfaction. It used multiple regression analysis and forcedly adopted linear regression analysis model to further understand the effect on customer satisfaction. It also used VIF to determine whether collinearity problem exists. It referred to the VIF value > 10 proposed by Hair et. al., (2009) indicating that possible collinearity problem can be diagnosed accordingly. The results of multiple regression analysis and forced variable method is shown in Table 4-4. The results showed that the linear regression model obtained significant standard (F $= 1179.59$, adjusted R2 $= 0.822$, P < 0.05), VIF value is between 2.35-5.92 and the values are all less than 10 which means that the independent variables has no collinearity problem among them. Moreover, Durbin-Watson>1 indicates that no inter-collinearity existed. Thus, no significant collinearity existed among independent variables.

This shows that the dimensions tangible, reliability, responsiveness, assurance and empathy of service quality has 82.20% explained variance and model fit on customer satisfaction. Therefore, this shows that the linear regression model of the independent and dependent variables have statistical significant.

Table 4-4. The results of multiple regression analysis and forced variable method.

Table 4-4 Regression Analysis of Service Quality on Customer Satisfaction

Dependent variable	Regression model	B coefficient	t-value	adjusted R^2	p-value	F-value	Collinearity Statistics VIF	Durbin-Watson
Customer satisfaction	Constant		3.167	0.822	0.002	1179.59		1.963
	Service quality							
	tangible	0.08	4.49		0.000		2.35	
	reliability	0.21	8.20		0.000		4.51	
		0.34	11.84		0.000		5.92	
	responsiveness							
	assurance	0.18	7.82		0.000		3.85	
	empathy	0.18	8.23		0.000		3.45	

* P <0.05 shows significant standard (two-tailed); ** P < 0.01 shows significant standard (two-tailed), *** P < 0.001 shows significant standard (two-tailed)

4.6 Result of the Research Hypotheses

This study mainly explore on the relationships of BAS personnel's service quality, customer satisfaction and performance evaluation. Thus, the following hypotheses were proposed. The results of correlation analysis and regression analysis of the hypotheses are shown in Table 4-5.

Table 4-5 Results of Research Hypotheses

Hypotheses	Supported/rejected
H_1: The demographical variables have no significant effect on service quality.	Supported
H_2: The demographical variables have no significant effect on customer satisfaction.	Partially Supported
H_3: The service quality and customer satisfaction have positive effect.	Supported

5. Conclusion and Suggestion

5.1 Conclusion

This study used correlation analysis and regression analysis as the basic statistical methods. It also used analysis of variance (ANOVA) to investigate the effect of the different demographic variables of the respondents toward the service quality, customer satisfaction and performance evaluation on BAS personnel. The conclusions are the following:

1. The demographic variables have no significant effect on service quality. The hypothesis is supported.

   This study used analysis of variance (t-test and one-way ANOVA) and found that gender, marital status, educational background, age, occupation and average income per month of the respondents have no significant difference on the service quality of the BAS personnel.

2. The demographic variables have no significant effect on customer satisfaction. The hypothesis is partially supported.

   This study used analysis of variance (t-test and one-way ANOVA) and found that gender, marital status, educational background, age and average income per month of the respondents have no significant difference on the customer satisfaction of the BAS personnel. The occupation of respondents has a significant difference toward their customer satisfaction on BAS personnel where the satisfaction of non-civil servant respondents on the whole space environment, professional quality, safe and satisfactory service, service attitude and service efficiency is greater than the civil servants.

3. Service quality has a positive effect on customer satisfaction.

   Past scholars pointed out the customer satisfaction has service quality as its

prepositional effect (Bolton and Drew, 1991). The study of Spreng and Mackoy (1996) also found that service quality is the antecedent of customer satisfaction. Moreover, through correlation analysis and regression analysis, this study found that service quality positively affects customer satisfaction.

4. Performance evaluation is based on work knowledge and document performance, innovation research and simplified process, service attitude, moral integrity, leadership and coordination ability, annual work plans and language skills.

This study explored on the performance evaluation (7 items) of the respondents on the BAS personnel through the 25-item questionnaire and more 50% of the respondents agree with the screening conditions of the performance evaluation. The respondents agreed that "you believe that the BAS personnel can fulfill the work they promised you on the scheduled time", "when you have doubts, the BAS personnel can assurance you that they can solve your problem", "you believe that BAS personnel can fully use modern IT facilities in their daily works" can be used to evaluate the work knowledge under performance evaluation. In evaluating service attitude, the respondents agreed that "you believe that the BAS personnel are not too busy to rapidly respond your request", "you believe that the BAS personnel are always willing to provide the services and can provide it in the right time", "when you have complaints, the BAS personnel will gladly accepts and deal with it carefully", "you believe that the BAS personnel are reliable" and "you believe that the BAS personnel will tell you correctly when they will finish the job" can be used to evaluate service attitude. Under moral integrity, "you believe that the BAS personnel can fulfill the work they promised you on the scheduled time" is agreed upon by the respondents that can be used as an evaluation of moral integrity. Innovation research, leadership and coordination ability, annual work plans and language skills were not considered to be evaluating items of performance evaluation by the respondents because less than half agreed.

This study furthered explored on the performance evaluation (7 items) of the respondents on the BAS personnel through the 5 questions on customer satisfaction and more 50% of the respondents agree with the screening conditions of the performance evaluation. In service attitude, the respondents agreed that "the service of the BAS personnel makes you safe and satisfied because you know they will protect your rights", "overall, I am satisfied with the service performance of this

department" and "overall, I am satisfied with the space environment" can be used to evaluate the service attitude under performance evaluation. In work knowledge, "overall, I am satisfied with the professional quality of this department" is agreed upon by the respondents that can be used as evaluation work knowledge. This study found that "work knowledge and document performance" and "service attitude" are related in customer satisfaction and performance evaluation. Innovation research, moral integrity, leadership and coordination ability, annual work plans and language skills were not considered to be evaluating items of performance evaluation by the respondents because less than half agreed.

5.2 Limitations and Suggestions for Future Studies

5.2.1 Limitations

Although this study sought to comply with the objectivity of scientific research principles, but due to the limitation in personal knowledge and ability, time and money, the study has the following limitations:

1. In sample selection, the respondents are the civil servants (internal customer) in the Pingtung County, Kaohsiung City and Kaohsiung County government and its subsidiary departments that are not under the BAS department and the citizens that visited these departments (external customer). Other citizens are not included in the sample selection.

2. The researchers only used the questionnaire to analyze and explain the relationship and difference among the variables. It would be better if actual interview can be conducted to further understand the relationship among the service quality, customer satisfaction and performance evaluation of the BAS personnel. The collected data would be more objective and complete and the results would be more consisted which would improve the value of this study.

3. In the screening condition of the 25 service quality questions and 5 customer satisfaction questions, more than 50% respondents agree on the performance evaluation is set as the limit.

5.2.2 Suggestions for Future Studies

1. The subjects can be extended by adding other government agencies such as Kaohsiung and Pingtung Health Bureau and clinics and police stations under these jurisdictions to establish a more universal conclusion.

2. This study suggest the use of LISREL to explore the relationships of the dimensions of service quality (tangible service, reliable service, service responsiveness, service assurance and empathic

service) with customer satisfaction and performance evaluation.

3. Since this study adopted a quantitative research as the main method, it suggests the use of qualitative method in the future. For example, in-depth public interview of this issue to make up for the inadequacy of the quantitative research.

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References
1. Hair, J. F., William C. B., Barry J. B., and Rolph E. A., 2009, *Multivariate Data Analysis(7 Ed.)*, New Jersey:Prentice Hall.
2. Anderson, D. R., Dennis J. S. and Thomas A. W., 2010, *Statistics for Business and Economics(11 Ed.)*, South-Western College Pub.
3. Chang, Chiu-Hung, 2003, *Enhanxing the Service Quality of Governmental Accounting Personnel:A Survey Research*, Unpublished Ethesys, Yuan Ze University, Taoyuan County.
4. Anderson, E.W. and Sullivan, M.W., 1993, The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, 12(2), 125-143.
5. Bolton R. N. and Drew J. H., 1991, A longitudinal analysis of the impacts of service changes on customer attitudes, *Journal of Marketing,* 55(1), 1-9.
6. Buttle, F., 1996. SERVQUAL: review, critique, research agenda. *European Journal of Marketing*, 30(1), 8-32.
7. Cronin, J. J., Joseph, Jr., and Taylor ,S. A., 1992, Measuring Service Quality：A Reexamination and Extension. *Journal of Marketing*, 56, 55-68.
8. Cronin, J. J., and Taylor, S.A., 1994, "SERVPERF versus SERVQUAL: Reconciling Prformance-Based and Perceptions-Minus-Expectations Measurement of Service Quality," *Journal of Marketing*, 58(1), 125-131.
9. Drucker, P., 1993, "*From capitalism to knowledge society*", Post-Capitalism Society, HarperCollins Publishers, Inc.
10. Hurley, R. F. and H. Estelami, 1998, Alternative indexes for monitoring customer perceptions of service quality: A comparative evaluation in a retail context, *Journal of the Academy of Marketing Science*, 26(3), pp.209-221.
11. Kaplan, R. S. and Norton, D. P., 1996. Linking the balanced scorecard to strategy, *California Management Review*, Fall, **4,** 53-79.
12. Nunnally, J. C., 1978, *Psychometric theory*, 2nd ed., Mc Graw-Hill, New York.
13. Oliver, R.L. (1993), A Conceptual Model of Service Quality and Service Satisfaction：Compatible Goals, Different Concepts, *Advances in Service Marketing Management*, JAI Press, Greenwich, CT, 11, 65-85.
14. Parasuraman, A., Zeithaml, V. A., and Berry, L. L., 1985, A Conceptual Model of Service Quality and its Implications for Future Research . *Journal of Marketing*, 49(4), Fall , 48.
15. Parasuraman, A., Zeithaml, V. A., and Berry, L. L., 1988, A Conceptual Model of Service Quality and its Implications for Future Research. *Journal of Marketing*, Vol 52,number 3, 46.
16. Rust, R. T., and Oliver, R. L., 1994, *Service quality*, Sage publications ltd., Thousand Oaks, CA.
17. Spreng, R.A. and Mackoy, R., 1996, An empirical examination of a model of perceived service quality and satisfaction, *Journal of Retailing*, 72(2), 201-214.
18. Zeithaml, V. A., and Bitner, M. J., 2000, *Service marketing : integrating customer focus across the firm*, 2nd Ed., McGraw-Hill, New York.
19. Wakefield, R. L., 2001, Measuring Service Quality: A Reexamination and Extension, *The CPA Journal*, pp.55-68.

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