

## Understanding Perceived Telecommunication Service Quality Discrepancies between Service Providers and Customers: Case of Telecommunication Service in China

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**Abstract.** The efficiency of telecommunication services (TS) has increased their popularity. However, objectively evaluating the quality and the potential of TS is difficult for the TS provider because its milieu differs from that of the customer. This obstructs the progression of TS development and usage. No study has established a satisfactory model for estimating the discrepancy. This study therefore provides a model for measuring the presence, magnitude, and form of the perception discrepancy regarding TS. This model further explores the conditions under which the perception discrepancy regarding TS occurs and predicts the direction of change. The analytical results demonstrate evidence that TS providers and customers differ in their preferences for TS, and the difference in milieu of the TS providers and customers correlate with the variation in preference. The contributions of this model are to help TS provider and customer gauge the pros and cons of investment in TS and shape corresponding strategy by linking the developed model, short/long-term TS strategies, and business activities related to TS.

**Keywords:** telecommunication service, perception discrepancy, service quality.

### 1. Introduction

Intuitively, after the telecommunication privatization policy was implemented in 1996 in Taiwan and in 1999 in Mainland China, the deregulated telecommunications B2B market quickly responded to customer requirements and expectations in order to maximize customer satisfaction. However, Telecommunication Service (TS) did not substantially progress [1-2] because customer satisfaction is estimated through the TS quality, and both TS providers and customer had difficulty in objectively evaluating TS quality, leading that the view between TS provider and customer regarding the development direction of TS are diverse. The reasons causing this phenomenon are twofold. First, from the TS provider perspective, the TS provider encounters a management dilemma when government attempts to maintain market competition according to the national policy for public resource management. For example, since the service fee of nation-wide TS is still regulated and limited by the Taiwan government and Mainland China government, it does not reflect the actual market price. Furthermore, TS providers always be asked to cooperate with the national-wide telecommunication policy. Therefore, unlike conventional services, the development of TS is affected not only by customer, but also by government policy. Secondly, from the TS customer perspective, a TS is

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considered effective if the gap between customer expectations and actual services received is small, and the perception regarding the TS is determined by the IT and organization milieu of the customer. Therefore, customer satisfaction toward the TS quality is a compound effect that varies according to the customer IT construct (e.g., IT infrastructure and training) and organization characteristics (e.g., centralization and formalization). This means that the different milieus of the TS provider and customer result in different perceptions toward TS. Notably, this phenomenon has been observed not only in Taiwan and Mainland China but also in South Korea and Japan [3-4]. According to the above discussion, the quality and development scheme of the TS should depend not only on customer satisfaction, but also on the gap in perceptions of TS quality between the provider and customer. Hereafter, this perception discrepancy toward TS quality between provider and customer is referred to as perception discrepancy of service quality (PDSQ).

We therefore attempt to provide a model criticality assessment methodology to measure the gap of the perception discrepancy of service quality (PDSQ) between “the service quality which provider presume customer to experience” and “the service quality which the customer actually experiences”. By the results gotten by this study, e-enterprises can more easily adjust the investment ratio on the telecommunication services to promote customer satisfaction and maximize business revenue. This study is a more concise and updated version of our previous work [5] where the comprehensive information was provided, and we also attempt to explore the relationship between telecommunication service providers and customer not only in Taiwan but also in Mainland China, let analytic result be more approaching to population.

## 2. Hypotheses

This study analysed the presence, magnitude, and forms of PDSQ by using data obtained from TS providers and customers. For this purpose, this study defines the provider perception of service quality (PPSQ) as the expected service quality from the provider perspective and defines customer perception of service quality (CPSQ) as the quality and functionality that a customer actually experiences from the acquired service. Therefore, PDSQ is the gap between the PPSQ and CPSQ. The presence and magnitude of PDSQ might be related to the IT construct gap between provider and customer, and they might be also related to the differences in organizational characteristics between the provider and customer. Therefore, this study also defines the IT construct gap (ITG) as the IT construct gap between a provider and a customer in terms of IT infrastructure and training and defines the organization characteristic difference (OCD) as the different degrees of the formalization and centralization between a provider and a customer. By exploring the relationship between ITG and PDSQ and the relationship between OCD and PDSQ, the TS provider can comprehend the conditions under which the PDSQ takes place and predict the direction of the PDSQ changes.

Three hypotheses are introduced for this study:

- Hypothesis 1. Perceived discrepancy of service quality (PDSQ) does not significantly differ between providers and customers.
- Hypothesis 2. The IT construct gap between TS provider and customer correlates negatively with PDSQ.
- Hypothesis 3. The difference in organizational characteristics between the TS provider and customer correlate positively with PDSQ.

The data used to test Hypothesis 1~3 regarding the TS provider perspective of service quality were collected from the five TS providers in Taiwan and Mainland China. The five TS providers in Taiwan are Chunghwa Telecom, TWM Solution, FarEasTone, Asia Pacific Telecom, and Taiwan Star Telecom, with 30M telecommunication subscribers. The three TS providers in Mainland are China Mobile, China Telecom, and China Unicom, with 1.3 B telecommunication service subscribers. Since these TS providers provide similar TS products (i.e., virtual server hosting, audio conference service, micro payment service, etc.) at similar prices, the analysis did not consider the barriers and switching costs for TS customers switching between TS providers.

### 3. Results and Findings

Hypothesis 1, i.e., that service perceptions do not significantly differ between TS providers and customers, was tested. A one-way between-group MANOVA was used to compare the variation in perceptions between TS providers and customers towards TS. Table 1 shows that the multivariate analysis confirmed a statistically significant difference between TS providers and customers toward the TS quality. Based on the analytical results, Hypothesis 1 was rejected, i.e., service perceptions significantly differed between TS providers and customers.

Hypothesis 2, that the gap in IT construct between TS provider and customer significantly affects PDSQ, was tested. The Spearman correlation coefficient was used to measure the relationship between “IT construct gap between TS provider and customer (ITG)” and “perception discrepancy between TS provider and customer toward TS (PDSQ)”. Table 2 shows that both “the IT infrastructure gap” and “the IT training gap” have significant negative effects on “the perception discrepancy of system service quality” and “the perception discrepancy of information service quality”.

Hypothesis 3, i.e., that differences in organizational characteristics between TS provider and customer significantly affect PDSQ, was tested with the same methodology applied for Hypothesis 2. Table 3 shows that both “formalization difference” and “centralization difference” significantly and positively affect the perception discrepancy of system service quality, information service quality, and customer service quality.

TABLE I: RANKING OF WEIGHTED PERCEPTIONS: TS CUSTOMER AND TS PROVIDER

(a) Preferences towards TS indicators						
TS customer			TS provider			
Rank	Indicators	Weighted	Rank	Indicators	Weighted	
1	Integrity	0.113	1	After-sales service	0.182	
2	Accuracy	0.104	2	Technique support	0.172	
3	Security	0.094	3	Efficiency & effectiveness	0.078	
4	Technique support	0.081	4	Integrity	0.078	
5	After-sales service	0.080	5	Training	0.069	
6	Construct cost	0.079	6	Security	0.065	
7	Readability	0.076	7	Flexible-price policy	0.064	
8	Efficiency & effectiveness	0.074	8	Functionality	0.063	
9	Functionality	0.072	9	Integration	0.060	
10	Integration	0.058	10	Readability	0.055	
11	Usability	0.057	11	Accuracy	0.054	
12	Training	0.057	12	Construct cost	0.031	
13	Flexible-price policy	0.055	13	Usability	0.028	

  

(b) Multivariate test of variance						
variation of preference	Effect	Value	F	Hypothesis df	Error df	Significance
	Wilks' Lambda	0.581	2.275	13.000	41.000	0.023*
* $p < 0.05$ (1-tailed)						

TABLE II: THE EFFECT OF IT CONSTRUCT GAP ON PDSQ

Dimension		PDSQ					
		Perception discrepancy of system service quality		Perception discrepancy of information service quality		Perception discrepancy of customer service quality	
		rho value	p-value	rho value	p-value	rho value	p-value
ITG	IT infra. gap	-0.426	0.000**	-0.447	0.000**	0.398	0.000**
	IT training gap	-0.321	0.001**	-0.349	0.000**	0.205	0.000**
** $p < 0.01$ (1-tailed)							

TABLE III: THE EFFECT OF DIFF. OF ORGANIZATION CHARACTERISTICS ON PDSQ

Dimension		PDSQ					
		Perception discrepancy of system service quality		Perception discrepancy of information service quality		Perception discrepancy of customer service quality	
		rho value	p-value	rho value	p-value	rho value	p-value
OCD	formalization difference	0.205	0.000**	0.403	0.000**	0.093	0.009**
	centralization difference	0.200	0.000**	0.206	0.000**	0.090	0.008**
** $p < 0.01$ (1-tailed)							

## 4. Implications and Conclusions

Based on data commonly available in TS market collected not only from Taiwan but also from Mainland China, this study measured the presence and magnitude of PDSQ. The analytical results revealed statistically significant perception differences between TS providers and customers in terms of TS information quality, system quality, and customer quality regardless of economic sectors or business scale of TS customers. Notably, the perception of TS providers and customers substantially differed in indicators of after-sales service, technique support, construct cost, accuracy, and integrity.

The relationships between the ITG/OCD and PDSQ were further investigated. The results show that ITG is negatively correlated with PDSQ mainly due to a firm with high IT construct owns high expert power. This leads the firm with low IT construct tends to respect, trust, and accept the suggestion/solution of the firm with high IT construct, and look for leadership in advance. As a result, the higher ITG exists, the lower PDSQ is. On the other hand, the OCD is positively correlated with PDSQ because the more similar organization characteristics the provider and customer have, the more similar business behavior patterns they have, leading they have more similar perception toward the TS quality. Therefore, PDSQ decreases as OCD decreases. Based on the above discussion, a TS provider can foresee immediate positive outcomes and profits, if the customer is a low IT construct company and own similar organization characteristics compared to the TS provider. But inevitably, on a long term basis, the customers might find that the suggestion/solution is not suitable for them, after they are educated and their IT constructs are improved. On the other hand, on a short term basis, a TS provider have to estimate the following obstacles and complains, if the customer is a high IT construct company with different organization characteristics compared to the TS provider. But, this type of cooperation might let the two parties evolve to symbiosis relationship on a long term basis.

The analytical results of this study have several implications for researchers and practitioners. First, this study offers a new and comprehensive view of TS provider/customer perceptions and attitudes about TS. This study shows how and why their perceptions toward TS differ and also provides a model for measuring its presence, magnitude, and in what form it exists. This model further explores the conditions under which perceptions differ and their directions of change. Second, the TS provider can apply the proposed model to develop a business strategy based on PDSQ rather than merely relying on the customer satisfaction. By using the model to predict the evolvement of TS, the TS provider can adjust their future TS investment accordingly. The TS provider can also use the model to predict customer decisions after estimating ITG and OCD. Third, TS customers can also use this model to understand the motivations of the TS provider to provide such a TS service to them. That is, the TS customer can analyze and predict the business strategy of the TS provider by this model. Moreover, TS customers can better gauge the pros and cons of TS investment by linking this model, their short/long-term TS strategies, and their business activities relative to TS.

## 5. References

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